

**GOVERNMENT OF INDIA**  
**TARIFF COMMISSION**



**REPORT**

**ON THE**

**CAUSTIC SODA AND BLEACHING  
POWDER INDUSTRY**

**PRINTED IN INDIA BY THE MANAGER, GOVT. OF INDIA PRESS, NEW DELHI  
PUBLISHED BY THE MANAGER OF PUBLICATIONS, DELHI, 1955**

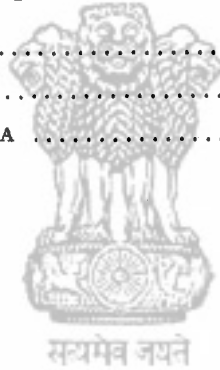
### PERSONNEL OF THE COMMISSION

SHRI M. D. BHAT ..... *Chairman.*  
SHRI B. N. ADARKAR, M.A. (CANTAB.) ..... *Member.*  
SHRI B. N. DAS GUPTA, B.A., A.S.A.A. (LONDON), F.C.A.....  
..... *Member.*  
SHRI C. RAMASUBBAN ..... *Member.*  
DR. D. K. MALHOTRA, M.A., PH.D. .... *Secretary.*

---

### Personnel of the panel which heard the case

SHRI M. D. BHAT ..... *Chairman.*  
SHRI B. N. ADARKAR ..... *Member.*  
SHRI B. N. DAS GUPTA ..... *Member.*



## MINISTRY OF COMMERCE & INDUSTRY

### RESOLUTION

#### TARIFFS

New Delhi, the 28th January, 1955

**No. 32(1)T.B./54.**—The Tariff Commission has submitted its report on the Caustic Soda and Bleaching Powder industry on the basis of an inquiry conducted by it under section 11 of the Tariff Commission Act, 1951.

2. The Commission has recommended the following scheme of protection:—

- (1) On the basis of the present tariff value of Rs. 28 per cwt. of caustic soda, a duty of 32.37 per cent. *ad valorem* is required to provide adequate protection to the domestic industry. However, in view of the desirability of maintaining the prices of caustic soda at a reasonable level, the existing preferential duty of 27.3 per cent *ad valorem* on caustic soda of U. K. origin should be converted into a protective duty, the standard rate of duty being fixed in accordance with the terms of the relevant trade agreements. If at any time it is found necessary to change the tariff value, the rates of duty should be so adjusted as to restore the quantum of tariff protection afforded to the domestic industry by the present rates of duty.
- (2) The fair ex-works price for indigenous bleaching powder for 1954—56 is lower than the c.i.f. price of imported bleaching powder. Actual production of bleaching powder being, however, very low the present costs of production are very high. There is also considerable prejudice on the part of consumers about the quality of the indigenous product. A protective duty of 15 per cent *ad valorem* should, therefore, be imposed on bleaching powder.
- (3) The protective duties recommended above should remain in force upto 31st December, 1958.

3. Government accept the above recommendations and will take steps to implement them as far as possible. As regards (2), the existing tariff item 28(1) covers both bleaching powder and bleaching paste. The Commission has subsequently clarified that the protective duty to be levied on bleaching powder should also apply to bleaching paste. Government accept this clarification and will take necessary steps to give effect to it.

(i)

4. The Commission has made the following ancillary recommendations :—

- (a) The domestic production of caustic soda is sufficient to meet only 35 per cent of the domestic requirements at present. The industry will, therefore, have to expand considerably before the country can become self-sufficient in respect of this essential material. Nearly 90 per cent of the present production of caustic soda is by the electrolytic process. The scope for expansion of the electrolytic section, however, is severely restricted owing to the relatively small demand for chlorine. The alternative process of causticisation is free from this drawback, but is at present uneconomical because of the high cost of indigenous soda ash. In order that production of caustic soda by causticisation may become economical, Government should formulate and put into effect as early as possible an integrated plan for expanding the production of both soda ash and caustic soda.
- (b) Government should keep a careful watch over the prices of caustic soda (both solid and liquid) and bleaching powder and, if necessary, take suitable measures under the Industries (Development and Regulation) Act to regulate them.
- (c) The railway and coastal freights on caustic soda and chlorine products, particularly hydrochloric acid, should be reviewed, in order to minimise the burden on the consumer and also to assist the fuller utilisation of chlorine which is vital to the development of the electrolytic section of the caustic soda industry. The industry should also be provided with adequate transport facilities for its raw materials and finished products.
- (d) The industry should be granted a rebate on the salt cess. The industry's requests for this and other similar concessions should be considered, not only from the angle of the present capacity of the industry to bear the burden but from the point of view of the desirability of minimising the burden on the consumer and of encouraging a rapid expansion of the industry so as to shorten the period for which it may need State assistance.
- (e) In order to encourage exports of liquid chlorine, empty cylinders provided by foreign buyers should be permitted to be brought into the country without payment of duty on condition that they will be re-exported within a specified period.
- (f) The industry should be given additional assistance by means of import control, so long as such control is in any case maintained for balance of payments reasons.
- (g) The Government of Madras should give special consideration to the requirements of the Mettur Chemicals and Industrial Corporation for electric power.

- (h) Government should take special measures to encourage the development of industries which require large quantities of chlorine.
  - (i) Transport of liquid chlorine over long distances is difficult and expensive and hence before allowing any new electrolytic plant to be set up in any region, due regard should be paid to the supply and demand position of chlorine in that region.
  - (j) Government should examine the scheme of Tata Chemicals for manufacture of caustic soda from imported Magadi ash.
  - (k) The industry should be given all possible assistance in starting the production of high test hypochlorite.
  - (l) The question of installing washing plants at the Sambhar Salt works should be given early consideration.
  - (m) It appears that the declared value per cwt. of caustic soda as recorded in the import statistics is higher than the c.i.f. value reported to us by the principal importers. The Collectors of Customs should examine the reasons for this discrepancy.
  - (n) The c.i.f. prices charged by I.C.I. (India) Ltd., for caustic soda and bleaching powder imported through them by consumers against actual user licences are higher than those at which these materials are imported by I.C.I. (India) Ltd., themselves. Government's attention is drawn to this fact in order that the profits accruing to the I.C.I. (India) Ltd., from imports of caustic soda and bleaching powder may be accurately determined.
  - (o) The manufacturers of electrolytic caustic soda should intensify their efforts to develop new uses for chlorine.
  - (p) The Alkali and Chemical Corporation should try to utilise their full capacity for the manufacture of benzene hexachloride.
  - (q) The manufacturers should examine the suitability of salt produced at Kandla for production of caustic soda.
  - (r) The manufacturers should take suitable steps to remove the defects pointed out by consumers in the quality and packing of their caustic soda.
  - (s) The manufacturers should continue to make further efforts to improve the strength and stability of their bleaching powder.
5. Government have taken note of the recommendations at (a) to (c) and (f) to (n) and propose to pursue these suggestions further. Recommendations (d) and (e) are under examination.
6. The attention of the industry is drawn to recommendations (o) to (s).

---

#### ORDER

Ordered that a copy of this Resolution be communicated to all concerned and that it be published in the *Gazette of India*.

K. B. LALL, Jt. Secy.

# MINISTRY OF COMMERCE & INDUSTRY

## NOTIFICATION

### TARIFFS

New Delhi, the 28th January, 1955

**No. 32(1)-T.B./54.**—In exercise of the powers conferred by sub-section (1) of section 3A of the Indian Tariff Act, 1934 (XXXII of 1934), as in force in India and as applied to the State of Pondicherry, the Central Government hereby directs that, with immediate effect, there shall be levied on the articles specified in column (1) of the Table hereto annexed when imported into India or into the State of Pondicherry the duties of customs specified in the corresponding entry in column (2) thereof.

### THE TABLE

Name of article.	Duty of customs (inclusive of the duty leviable under sub-section (1) of section 2 of the Indian Tariff Act, 1934 and any additional duty leviable under any other law for the time being in force).
(1)	(2)
Soda, caustic—	
(a) if of the United Kingdom or British Colonial origin .	27·3 per cent <i>ad valorem</i> .
(b) if not of the United Kingdom or British Colonial origin .	37·3 per cent <i>ad valorem</i> .
Bleaching paste and bleaching powder. . . . .	15 per cent <i>ad valorem</i> .

P. GOVINDAN NAIR, Jt. Secy.

## CONTENTS

Para.	Page
1. Previous tariff inquiries . . . . .	1
2. Reference to the Commission . . . . .	2
3. Recommendations in previous reports on matters other than tariffs and subsidies . . . . .	2
4. Scope of the inquiry . . . . .	4
5. Method of inquiry . . . . .	4
6. Domestic demand . . . . .	5
7. Rated capacity and production . . . . .	11
8. Raw materials . . . . .	21
9. Quality of the indigenous products . . . . .	24
10. Imports and import control policy . . . . .	26
11. Existing rates of customs duty . . . . .	28
12. C.i.f. prices and landed costs of caustic soda and bleaching powder	30
13. Commission's estimates of the costs of production and fair ex-works prices of indigenous caustic soda and bleaching powder. . . . .	31
14. Measure of protection . . . . .	39
15. Financial effects of uniform controlled prices for indigenous and imported caustic soda . . . . .	41
16. Other assistance . . . . .	43
17. Summary of conclusions and recommendations . . . . .	45
18. Acknowledgements . . . . .	49

## APPENDICES

I. Government of India, Ministry of Commerce and Industry Resolution No. 32 (I)-T.B./52, dated 19th July, 1952 . . . . .	50
II. List of firms, bodies and associations to whom the Commission's questionnaires were issued and from whom detailed replies or memoranda were received . . . . .	51
III. List of persons who attended the Commission's public inquiry on the 11th and 12th February, 1954 . . . . .	54
IV. Statement showing the selling prices charged by the manufacturers of caustic soda since May, 1951 . . . . .	56

## REPORT ON THE CAUSTIC SODA AND BLEACHING POWDER INDUSTRY

1.1. The claim of the caustic soda and bleaching powder industry to protection or assistance was first examined by the Tariff Board in a report submitted to Government on 20th July, 1946. The Board recommended *inter alia*, that Mettur Chemical and Industrial Corporation, Ltd., Mettur Dam, the only applicant for protection, should be given a subsidy at the rate of Rs. 2 per cwt. of caustic soda and Rs. 1-13-0 per cwt. of bleaching powder for a period of 15 months from 1st October, 1946 on the basis of their actual sales, but subject to the condition that the Company would sell these chemicals at prices not higher than those of the imported products. No protection or subsidy was recommended for liquid chlorine. The Government of India in the Department of Commerce by their Resolution No. 218-T(19)/47, dated 22nd March, 1947 accepted this recommendation, but laid down a further condition that the subsidies on caustic soda and bleaching powder would be reduced if, upon examination of the Company's accounts, it was found that the Company had made profits on the sale of liquid chlorine in excess of the profits allowed by the Board for this item in making its estimates of fair selling prices. On an examination of the Company's accounts in May, 1948, the Board found that the conditions laid down by Government were not fulfilled. The Board, therefore, in its letter No. TB/E/4, dated 15th June, 1948 recommended that the subsidies should not be paid. Government accepted this recommendation.

1.2. On 28th March, 1949, Mettur Chemical and Industrial Corporation, Ltd., requested Government to institute a fresh tariff inquiry into this industry in view of the changed circumstances in the latter half of 1948 as a result of heavy imports in 1948-49. This was followed by an application from the Indian Chemical Manufacturers' Association on 13th April, 1949 for grant of protection or assistance to this industry. Accordingly, the Government of India in the Ministry of Commerce, by their Resolution No. 32(1)-TB/49, dated 29th June, 1949, referred the case to the Board for fresh investigation. The Board after a detailed inquiry submitted its Report on 30th December, 1950 recommending the imposition of the following protective duties for the period up to 31st March, 1954.

	Standard rate of duty	Preferential rate of duty if the article is the produce or manufacture of U. K. or a British Colony
Caustic Soda . . . . .	Rs. 8-10-0 per cwt.	Rs. 6-4-0 per cwt.
Bleaching powder . . . . .	„ 2-8-0 „ „	„ „
Liquid chlorine . . . . .	„ 20-2-0 „ „	Rs. 14-8-0 „ „

The Government of India in the Ministry of Commerce and Industry in their Resolution No. 32(1)-TB/51, dated 18th May, 1951 on the Board's Report, stated that Government did not consider it necessary



to impose the protective duties recommended by the Board, because since the submission of the Board's Report, the landed cost of imported caustic soda had shown a marked increase. In view of the increase in the landed cost, the selling price of imported caustic soda under the Supply and Prices of Goods Act, 1950, was fixed at a higher rate, viz., Rs. 40-6-0 per cwt. f.o.r. Bombay, and since it would be difficult to enforce two different prices for the same commodity, domestic producers also were allowed to market their caustic soda at the same price, although the fair selling price of indigenous caustic soda estimated by the Board was Rs. 27-2-0 per cwt. Government desired that the domestic industry should take advantage of this arrangement to strengthen its financial position and stated that this would be taken into account while considering any future claim of the industry to grant of protection or assistance.

2. In May, 1952, the following four firms, namely, Tata Chemicals Ltd., Bombay, Mettur Chemical and Industrial Corporation Ltd., Mettur Dam, D.C.M. Chemical Works, Ltd., Delhi and Rohtas Industries, Ltd., Dalmianagar applied to Government for a fresh inquiry into this case, on the ground that the cost of production of indigenous caustic soda and bleaching powder had increased since the previous inquiry and that heavy imports of these chemicals in 1951-52 had adversely affected the position of the domestic industry. After considering these applications, the Government of India in the Ministry of Commerce and Industry by their Resolution No. 32(1)-TB/52, dated 19th July, 1952 referred the case to the Commission for inquiry under section 11 of the Tariff Commission Act, 1951. (See Appendix I).

3.1. In its first Report on this industry submitted on 20th July, 1946 the Board made the following recommendations:  
**Recommendations in previous Reports on matters other than tariffs and subsidies**

- (1) As the production of caustic soda and bleaching powder in the country was much below its requirements, it was desirable to increase the production of these chemicals by setting up additional plants. The Board was advised that an electrolytic plant with a rated capacity of 15 to 20 tons of caustic soda per day would constitute an economic unit. Government should consider the desirability of either themselves setting up or giving encouragement to the installation of two or three large factories for the manufacture of caustic soda. Some of these plants should be based on the production of caustic soda by the causticisation process in which the problem of disposal of chlorine did not arise. Electrolytic plants should be set up where cheap electric power was available and other factors were favourable and plans should be devised for the utilisation of chlorine by manufacturing compounds and also for the utilisation of hydrogen.
- (2) The manufacturers should be given facilities for imports of plant and equipment.
- (3) The import duty on machinery required for the production of caustic soda, bleaching powder and liquid chlorine should be refunded.

- (4) Concessional freight rates should be granted for transport of materials required for the manufacture of these chemicals and electric power should be made available at specially low rates.
- (5) Arrangements should be made for getting experts conversant with the alkali industry to work the plants for the first few years.
- (6) An Inspector should be appointed to visit the works of the Mettur Chemical and Industrial Corporation periodically and to see that all possible measures of economy were being taken and that the Corporation's plans for making its plant up to date were being implemented.
- (7) Caustic soda should be included in the Open General Licence for the sterling area countries and licences for imports of this article from non-sterling countries at competitive prices should be granted freely.

3.1.1. Government's decisions on these recommendations were embodied in the Department of Commerce Resolution No. 218-T(19)/47, dated 22nd March, 1947. The attention of the industry was drawn to recommendations (1) and (5). Government accepted recommendation (2), but with regard to recommendations (3) and (4), it was stated that they were under consideration. Government proposed to take suitable action to implement recommendations (6) and (7). As stated earlier, however, the scheme of protection recommended for this industry was terminated on the advice of the Board in June, 1948, since the conditions laid down by Government for the grant of subsidy to the Mettur Chemical and Industrial Corporation were not fulfilled.

3.2. In its second Report on this industry submitted on 30th December, 1950, the Board made the following recommendations:—

- (1) The manufacturers should take early steps to balance their plants so as to achieve a fuller utilisation of chlorine by manufacture of suitable chlorine products.
- (2) They should also take steps to improve the quality of their products.
- (3) The questions of concessional freight rates on the raw materials and the finished products and of adequate transport facilities should be taken up with the railway authorities.
- (4) The industry should be given adequate supplies of M.S. sheets.
- (5) The industry's request for a rebate on the salt cess should be given sympathetic consideration.
- (6) The suggestions made by the D.C.M. Chemical Works regarding the substitution of hydrochloric acid for sulphuric acid in certain industrial uses should be examined by the Director-General, Supplies and Disposals and if they were found practicable, the Railway Board should be approached for a reduction of freight on hydrochloric acid.

3.2.1. Government's decisions on the above recommendations were announced in the Ministry of Commerce and Industry Resolution No. 32(1)-TB/51, dated 18th May, 1951. The attention of the industry was drawn to recommendations (1), (2) and (3), while recommendations (4), (5) and (6) were stated to be under examination.

3.3. The industry has expanded considerably since the last inquiry, as may be seen from the particulars given in paragraph 7. Facilities have been given to manufacturers for import of plant and equipment, though such plant and equipment continue to be subject to import duty. The questions of assistance required by the industry in regard to its raw materials and of concessional freight rates on caustic soda, liquid chlorine and hydrochloric acid are discussed in paragraphs 8 and 16. The progress made by the industry in the utilisation of chlorine and in improving its manufacturing efficiency and the quality of its products is discussed in paragraphs 7.7, 7.8 and 9. The question of appointing an Inspector to visit the works of Mettur Chemical and Industrial Corporation was not pursued, since the scheme of protection recommended by the Board in its 1946 Report was terminated in June, 1948. Details of the import control policy regarding caustic soda are given in paragraph 10.

4. The scope of the present inquiry is limited to caustic soda and bleaching powder. There are no imports of liquid chlorine and hence the question of protecting this commodity against foreign competition does not arise. The present position regarding the production of liquid chlorine and other chlorine products has, however, been indicated in the Report, since it has a bearing on the question of protection or assistance to the main industry.

5. On 14th August, 1953, the Commission issued a press note inviting firms, persons and associations interested in this industry or in industries which use its products to obtain copies of the relevant questionnaire from the Office of the Commission and to submit replies thereto. A list of those to whom the questionnaires were issued and from whom detailed replies or memoranda were received is given in Appendix II. The Collectors of Customs were asked to furnish information regarding the c.i.f. prices and landed costs of caustic soda and bleaching powder. The Industrial Adviser (Chemicals) and the Textile Commissioner, Government of India, were requested to send detailed memoranda on the various points arising out of this inquiry. The Ministry of Defence was invited to express its views on the quality of the indigenous products and on the desirability of granting protection to this industry. The Directors of Industries in States where the caustic soda factories are located were requested to furnish memoranda on the progress of the industry. The views of the Indian Chemical Manufacturers' Association, Calcutta and of the Associations of Millowners, paper manufacturers and soap manufacturers were obtained on the various aspects of the inquiry with which they were concerned. Shri M. D. Bhat, Chairman, visited the Works of Travancore-Cochin Chemicals and Mettur Chemical and Industrial Corporation; Shri B. N. Adarkar, Member, visited the works of Alkali and Chemical Corporation, Hindustan Heavy

Chemicals and Tata Chemicals; and Shri B. N. Das Gupta, Member, visited the works of Travancore-Cochin Chemicals, Alkali and Chemical Corporation, Hindusthan Heavy Chemicals and Tata Chemicals, on various dates from 23rd September, 1953 to 6th February, 1954. Shri S. S. Mehta, Technical Director (Chemicals), visited the factory of Tata Chemicals on 6th February, 1954. Shri R. Sundaram, Cost Accounts Officer, examined the costs of production of Mettur Chemical and Industrial Corporation from 22nd to 24th September, 1953, of Travancore-Cochin Chemicals on 25th September, 1953 and of Tata Chemicals, from 17th to 21st November, 1953. The costs of production of D.C.M. Chemical Works, Delhi, were examined by Shri S. V. Rajan, Assistant Cost Accounts Officer, on 21st January, 1954. A public inquiry into this industry was held at the Commission's office in Bombay on 11th and 12th February, 1954. A list of those who attended the inquiry is given in Appendix III.

### 6.1. Caustic Soda:

6.1.1. At the previous inquiry held in 1950, the Tariff Board estimated the annual domestic demand for caustic soda at that time at 60,000 tons as follows:—

	Tons
Soap . . . . .	25,000
Textiles . . . . .	15,000
Paper . . . . .	10,000
Vanaspati . . . . .	1,500
Rayon . . . . .	5,000
Miscellaneous . . . . .	3,500
	<hr/> 60,000 <hr/>

These estimates were exclusive of the requirements of certain paper mills in so far as they were met by their own production. The Board estimated that the domestic demand for caustic soda would increase to 72,000 tons by 1953. In their "Programmes of Industrial Development, 1951-56", the Planning Commission have given the following estimate of the domestic requirements for caustic soda in 1951:

	Tons
Soap . . . . .	19,000
Textiles . . . . .	15,000
Paper . . . . .	10,000
Vanaspati . . . . .	1,700
Rayon . . . . .	4,500
Miscellaneous . . . . .	3,800
	<hr/> 54,000 <hr/>

Assuming a production of 130,000 tons of soap in 1952-53 and 200,000 tons in 1955-56 and providing for increased consumption in

the paper, textile, rayon, aluminium and other industries, the Planning Commission estimated the demand for caustic soda at 58,000 tons in 1952-53 and 87,000 tons in 1955-56.

6.1.2. At the present inquiry, we have received widely varying estimates of demand; the estimates of present demand range from 50,000 to 75,000 tons and those of future demand from 70,000 to 85,000 tons. The subject was discussed at considerable length at the public inquiry taking the estimates furnished by the Development Wing of the Ministry of Commerce and Industry as the basis of discussion. The Development Wing had framed its estimates after taking into account the actual consumption of caustic soda in the various industries and their probable future requirements. The estimates of demand which we have finally arrived at are given below:—

		(In tons.)	
		Present	By 1956
Soap . . . . .		16,000	18,000
Textiles . . . . .		21,000	23,000
Paper . . . . .		19,000	27,000
Vanaspati . . . . .		1,050	1,375
Rayon . . . . .		3,750	16,250
Petroleum refining . . . . .		100	1,500
Chemicals, including dye stuffs . . . . .		200	600
Aluminium . . . . .		1,000	3,500
Miscellaneous . . . . .		2,000	2,500
		<hr/>	<hr/>
		64,100	93,725
		<hr/>	<hr/>
Say		65,000	94,000
		<hr/>	<hr/>

The total of imports and production of caustic soda (including the production of the paper mills) was 32,790 tons in 1950, 53,755 tons in 1951, 68,876 tons in 1952 giving an average of 51,807 tons per annum. Imports of caustic soda in the first half of 1953 were abnormally low, owing to the restrictions on imports. Allowing for the upward trend of consumption, we consider the above estimate of 65,000 tons for current demand to be reasonable. Our comments on the estimates for individual industries are given below.

(a) We find that the estimates of demand for the soap industry adopted by the Tariff Board and the Planning Commission are on the high side. The present production of soap by the organised units is about 82,000 tons and although precise information about the production of soap by the cottage industry is not available, it is understood that the shortage and high prices of cocoanut oil have adversely affected production in that sector. We do not think that the total production of soap in the country is likely to be higher than 130,000 tons at present. We understand that the quantity of caustic soda used in soap making varies from 11.5 per cent. for laundry soap to 14.0 per cent. for toilet soap and since production of toilet soap is roughly of the order of 15 per cent. of the total soap production, the total quantity of caustic soda required by the soap industry

may be taken to be equal to about 12 per cent. of the estimated production of soap. On this basis, we have estimated the present demand for caustic soda from the soap industry at 16,000 tons. We understand that the demand for soap is not increasing as rapidly as was expected and we, therefore, consider it reasonable to estimate the consumption of caustic soda in this industry by 1956 at about 18,000 tons only.

(b) We understand from the Textile Commissioner that the actual consumption of caustic soda reported by 233 cotton textile mills in the first eight months of 1953 was 12,420 tons, indicating an annual rate of 18,630 tons. There has recently been some increase in the number of mercerising plants in the country. Some allowance has also to be made for the consumption in the handloom industry and the small quantities required by the artificial silk mills. On this basis, the above estimates of the present and future demand from the textile industry, namely, 21,000 tons and 23,000 tons are considered reasonable.

(c) The estimate of 10,000 tons adopted by the Planning Commission for the present consumption of the paper industry is unduly low. The actual consumption of caustic soda in 1953 as reported by the paper mills to the Development Wing was 19,000 tons (including caustic soda produced by the paper mills themselves). The production of paper and paper boards in 1953 was 138,434 tons, which indicates that on an average 13.72 tons of caustic soda are required per 100 tons of paper and paper boards. We understand that in the paper industry, there is a strong trend towards economising the use of caustic soda by installing more efficient recovery plants. On this ground, the representatives of Rohtas Industries who attended the public inquiry considered the above estimate of 19,000 tons to be too high. We have, however, adopted this estimate since it is based on the figures of actual consumption reported by the mills themselves. The total rated capacity for pulp is expected to increase from 151,000 tons in 1953 to 213,000 tons in 1956, i.e. by 40 per cent. We estimate that the consumption of caustic soda by the paper mills may also increase by a similar percentage and amount to 27,000 tons by 1956.

(d) The total production of vegetable ghee was 191,646 tons in 1953; and the estimated consumption of oil for this purpose was 210,000 tons. Taking the quantity of caustic soda required as 0.5 per cent. of the quantity of oil used, the current requirements of caustic soda for manufacture of vegetable ghee come to 1,050 tons. It was agreed at the public inquiry that the production of vegetable ghee might be expected to increase to 250,000 tons by 1956, which on the basis adopted for estimating current demand, would require 1,375 tons of caustic soda.

(e) In 1953, the total production of rayon filament was 8.05 million lbs. and that of rayon paper was 0.796 million lbs. Taking the consumption of caustic soda per lb. of rayon yarn or paper at 0.95 lb., the consumption of caustic soda by the rayon industry in 1953 is estimated at about 3,750 tons. By 1956, the production of rayon by National Rayon is expected to increase to 13 million lbs. and that by Travancore Rayon to 7.2 million lbs. The latter unit is expected to produce 3.36 million lbs. of rayon paper in addition.

Besides, Kesoram Cotton Mills have been permitted to set up a unit for production of rayon filament, with a capacity of 4 million lbs. The Staple Fibre Factory at Nagda may be expected to work to its full capacity of 12 million lbs. by 1956. Thus the total production of rayon filament, rayon paper and staple fibre is expected to increase to 39.56 million lbs. in 1956. Taking the consumption of caustic soda at 0.85 lb. per lb. of staple fibre and 0.95 lb. per lb. of rayon yarn or paper, the total quantity of caustic soda required is estimated at 16,250 tons.

(f) The Assam Oil Company consumed 100 tons of caustic soda in 1950. The refinery set up by Standard Vacuum has come into production and that of Burmah-Shell will probably go into production in 1956. The Development Wing, therefore, expects the requirements of caustic soda for petroleum refining to increase to 1,500 tons by 1956 and we have adopted that estimate.

(g) We have also adopted the Development Wing's estimates of the present and future requirements of caustic soda for production of chemicals and aluminium which were generally accepted at the public inquiry. Our estimates of miscellaneous requirements include about 800 tons required for processing of monazite sand at present and 1,500 tons in future.

## 6.2. Chlorine:

6.2.1. The domestic demand for chlorine was estimated by the Tariff Board in 1950 at 12,000 tons per annum. The quantity of chlorine produced by the paper mills for their own consumption was estimated at 3,000 tons, the quantity required in the form of bleaching powder, liquid chlorine and bleach liquor (for use in the textile and paper industries and for sanitation and water purification) at 7,000 tons and that required for production of hydrochloric acid and zinc chloride at 2,000 tons. As in the case of caustic soda, we have made fresh estimates of demand after taking into account the current trends of consumption in the principal industries which use chlorine. Liquid chlorine, bleach liquor and bleaching powder are interchangeable for several uses and no purpose will be served by attempting an estimate of demand for each of these products separately. We consider that a survey of the over-all consumption of chlorine in recent past would provide a better basis for estimating the demand for chlorine and we have accordingly analysed the available evidence on these lines. The following statement shows the domestic production of chlorine and its disposal since 1950:—

(In tons)

	Production of chlorine by paper mills for their own consumption	Production of chlorine by caustic soda units	Quantity of chlorine utilised in the manufacture of liquid chlorine or other chlorine products	Total of I & III
	I	II	III	IV
1950 . . .	2,509	8,479	6,783	9,292
1951 . . .	3,063	10,842	8,982	12,045
1952 . . .	3,288	10,645	9,637	12,925
1953 . . .	1,756	5,894	5,546	7,302
(Jan.—June.)				

The average consumption of indigenous chlorine during the above period of 3½ years works out to about 11,900 tons per annum. No imports of liquid chlorine have taken place in recent past, but we have to take into account imports of bleaching powder which were as follows:-

	Imports of bleaching powder	Equivalent chlorine @ 33%
1950 . . . . .	3,880	1,281
1951 . . . . .	10,073	3,324
1952 . . . . .	1,992	657
1953 . . . . .	2,812	928
(Jan.-June)		

The average consumption of foreign chlorine in the form of bleaching powder during the above period of 3½ years amounted to 1,770 tons per annum. Small imports of zinc chloride to the extent of 312 tons per annum, equivalent to about 110 tons of chlorine, have also taken place. The average consumption of indigenous chlorine and that of foreign chlorine during the above period could be taken to indicate the total average consumption in recent years. The sum total comes to about 13,780 tons, of which about 3,000 tons were produced by the paper mills for their own consumption, 5,260 tons were consumed in the form of liquid chlorine, about 2,595 tons in the form of bleaching powder, 1,025 tons in the form of zinc chloride and hydrochloric acid, 1,550 tons in the form of bleach liquor and the balance 350 tons in the form of benzene hexachloride and other products. Allowing for the recent increase in the consumption of liquid chlorine, the production of which has increased from 3,670 tons in 1950 to 5,156 tons in 1951, 6,124 tons in 1952 and 7,075 tons in 1953, we estimate the current consumption of chlorine at 16,000 tons as compared with 12,000 tons estimated by the Tariff Board in 1950.

6.2.2. At the public inquiry, the representative of the Bombay Mill-Owners' Association referred to certain factors which might adversely affect the off-take of chlorine by the textile industry in future. He stated that the mills had recently started using hydrogen peroxide in substitution of bleaching powder, whenever the latter was not available. We understand that two units with a total capacity of 1,440 tons per annum are likely to be set up in Bombay in the near future for the manufacture of hydrogen peroxide. We are doubtful, however, whether these units will be able to utilise their full capacity in view of the fact that imports of hydrogen peroxide have been of the order of 300 tons per annum only. It is not unlikely that consumption of hydrogen peroxide may go up when the material is produced locally but the effects of this factor on the demand for chlorine may be offset by the expected increase in the total consumption of chlorine in the textile industry. Some of the manufacturers have stated that zinc chloride which was being used in the textile industry for prevention of mildew is also being replaced by other chemical products. Recent figures of production and imports, however, do not indicate any marked decline in consumption; no allowance, therefore, need be made for this factor in estimating the future consumption of chlorine. The consumption of



chlorine by paper mills is at present well over 7,500 tons including 3,000 tons produced by the paper mills themselves, and in view of the expected increase of 40% in the pulp capacity by 1956 the annual consumption of chlorine by this industry may be expected to increase to 10,500 tons. Taking all these factors into account, we estimate that the demand for chlorine in the form of liquid chlorine, bleaching powder and bleach liquor may amount to about 15,400 tons by 1956.

6.2.3. We understand from the Travancore-Cochin Chemicals that the ammonium chloride plant at Alwaye, which is expected to come into production in 1955, will require 4,500 tons of chlorine as hydrochloric acid. The demand for hydrochloric acid for processing of monazite sand is expected to increase to 1,500 tons by 1956, as compared with 800 tons at present. An increase of 700 tons in the demand for hydrochloric acid on this account would mean additional consumption of chlorine to the extent of about 230 tons. Hydrochloric acid is, however, produced as a by-product of DDT also and it has been estimated that the DDT factory when working at full capacity would produce about 1,200 tons of hydrochloric acid. This will mean a reduction of about 400 tons in the demand for chlorine. The total requirements of chlorine for hydrochloric acid may thus increase to about 5,400 tons by 1956. It has been estimated that by 1956, production of DDT may be 700 tons and that of benzene hexachloride 1,800 tons and that the quantity of chlorine required for the manufacture of these two insecticides may be 1,400 tons and 1,350 tons respectively. The total consumption of chlorine for production of insecticides may thus amount to 2,750 tons per annum by 1956. Tata Chemicals' plant for benzene hexachloride with an annual capacity of 1,500 tons is expected to come into production in the latter half of 1954. Alkali and Chemical Corporation have an annual capacity of 300 tons of benzene hexachloride but their actual production was only 73 tons in 1952 and 67 tons in the first six months of 1953. In addition to the products mentioned above some provision has to be made for chlorine required for miscellaneous uses such as production of bagasse pulp and bromine.

6.2.4. Having regard to the various factors mentioned above, we estimate that by 1956, the demand for chlorine may increase to about 24,000 tons made up as follows:—

	Tons
(1) Chlorine required in the form of liquid chlorine, bleaching powder or bleach liquor for consumption in textiles and paper industries (including production of chlorine by the paper mills for their own consumption) and for sanitation and water purification . . . . .	15,400
(2) Chlorine required for hydrochloric acid and its derivatives (zinc chloride, ammonium chloride, etc.) . . . . .	5,400
(3) Chlorine required for insecticides and miscellaneous products . . . . .	3,000
TOTAL . . . . .	23,800
Say . . . . .	24,000

### 7.1. Caustic Soda:

7.1.1. At the time of the first inquiry held in 1946, only four units were engaged in the production of caustic soda for sale to the public, namely, Mettur Chemical and Industrial Corporation, Mettur Dam, Tata Chemicals, Mithapur, Alkali and Chemical Corporation, Calcutta and Rohtas Industries, Dalmianagar. By the time the second inquiry was held in 1950, two more units had come into existence, namely, Calico Mills (Chemical Division), Ahmedabad and D.C.M. Chemical Works, Delhi. The former came into production in December, 1947 and the latter, in March, 1949. The total rated capacity of the six units was 18,725 tons and their production 4,192 tons in 1947, 5,862 tons in 1948 and 7,315 tons in 1949. The industry now consists of eight units, two new units, namely, Travancore-Cochin Chemicals, Alwaye, and Hindusthan Heavy Chemicals, Calcutta, having come into production from October, 1952 and December, 1952 respectively. Tata Chemicals produce caustic soda by both causticisation and electrolysis, while the other units use the electrolytic process only. Travancore-Cochin Chemicals are the only unit equipped with Mercury cells and are consequently able to produce caustic soda of high degree of purity required by the rayon industry. Mercury cells which were installed at Rohtas Industries are not being operated as they are using diaphragm cells at present. The Alkali and Chemical Corporation, Calico Mills and Rohtas Industries produce most of their caustic soda in the liquid form, whereas the proportion of the production of liquid caustic soda to total production comes to 85 per cent. for D.C.M. Chemicals, 87 per cent. for Travancore-Cochin Chemicals and 83 per cent. for Hindusthan Heavy Chemicals. In the case of Mettur Chemicals the proportion is only 14 per cent., while Tata Chemicals do not produce any liquid caustic soda. Solid caustic soda in the form of flakes is produced by D.C.M. Chemicals, Mettur Chemicals and Travancore-Cochin Chemicals. In addition, four paper mills, namely, Titaghur Paper Mills, Calcutta, Shri Gopal Paper Mills, Ambala, Sirpur Paper Mills, Sirpur (Hyderabad), and Mysore Paper Mills, Bhadravati, Mysore have electrolytic caustic soda plants attached to them, but their production is mostly consumed in their own works. The following statement shows the annual rated capacity of the various units and their production of caustic soda since 1950.

*Statement showing the annual rated capacity of the various units for production of caustic soda and their actual production from 1950 to 1953.*

(Figures in tons.)

Serial No.	Name of the producer	Present annual rated capacity	Actual production				Remarks
			1950	1951	1952	1953	
1.	Tata Chemicals Ltd.						
	(i) Causticisation process	6,600	1,744	1,506	1,557	2,441	
	(ii) Electrolytic process	2,525	952	1,014	689	1,086	
		9,125	2,696	2,520	2,246	3,527	
2.	Calico Chemical Division	2,155	1,967	2,241	1,959	2,069	
3.	D.C.M. Chemical Works	4,620	2,014	2,575	2,930	3,532	
4.	Alkali & Chemical Corporation of India Ltd.	4,026	2,020	2,024	2,139	2,902	
5.	Mettrur Chemical and Industrial Corporation Ltd.	4,290	995	2,076	2,190	2,492	
6.	Rohtas Industries Ltd.	1,650	965	1,127	1,308	1,356	
7.	Travancore-Cochin Chemicals Ltd.	6,600			172	2,464	
8.	Hindusthan Heavy Chemicals Ltd.	2,046			16	459	
		34,512	10,657	12,563	12,960	18,841	
9.	Shri Gopal Paper Mills, Ambala						
10.	Sirpur Paper Mills Ltd., Sirpur, Hyderabad (Deccan)	713	500	538	607		
11.	Titaghur Paper Mills Ltd., Calcutta.	330	271	243	166		
12.	Mysore Paper Mills Ltd., Bhadravati, Mysore	3,465	2,057	2,671	2,932		
		297					
		4,805	2,828	3,452	3,705	3,990	
	TOTAL	39,317	13,485	16,015	16,665	32,831	

\*Caustic soda plants attached to the paper factories.

\* This information was furnished by the Development Wing of the Commerce and Industry Ministry.

7.1.2. The total rated capacity of the eight units, outside the paper industry is estimated at 34,512 tons per annum. Production of caustic soda by these units has shown an upward trend, being 10,657 tons in 1950, 12,563 tons in 1951, 12,960 tons in 1952 and 18,841 tons in 1953. The four paper mills which have caustic soda plants have a total capacity of 4,805 tons per annum and produced 2,828 tons in 1950, 3,452 tons in 1951, 3,705 tons in 1952 and 3,990 tons in 1953. Some of the units have been working far below capacity. In 1953, Tata Chemicals were able to use less than 40 per cent. of their capacity and Mettur Chemicals about 58 per cent. In the same period, however, production at Rohtas Industries, D.C.M. Chemicals, and Calico Mills amounted to more than 82 per cent., 76 per cent. and 96 per cent. respectively, while Alkali and Chemical Corporation have consistently been working above capacity. The difficulties of Tata Chemicals arise mainly from the high cost of their chemical caustic soda and their inability to dispose of their surplus chlorine. In the case of Mettur Chemicals, shortage of power has been the chief impediment to production. Rohtas Industries use their chlorine mostly in their own paper mills, while Calico Mills sell large quantities of chlorine to the textile mills at Ahmedabad. Alkali and Chemical Corporation also have no difficulty in finding an outlet for their chlorine, while D.C.M. Chemicals, in spite of their unfavourable location, have been able to establish a market for their chlorine in distant places like Ahmedabad, Bombay and Calcutta. Travancore-Cochin Chemicals will have a ready market for their chlorine in the form of hydrochloric acid, when the ammonium chloride plant to be set up by Fertilisers and Chemicals (Travancore) Ltd. comes into production, but till then they have to convert large quantities of their chlorine into bleach liquor and dump it into the sea. Production at Hindusthan Heavy Chemicals has been hampered by a variety of difficulties which were aggravated at the time of the inquiry by a sudden fall in their sales of liquid chlorine due to the strike at Titagur Paper Mills. Their plant was closed at the time of the inquiry. The extent to which the different units have been able to use their production of chlorine has been discussed later in sub-paragraph 7.8 below.

7.1.3. The evidence received by us shows that the upward trend of production is likely to be maintained in the next few years. By 1956, Tata Chemicals expect to increase their production to the full capacity of 9,125 tons of caustic soda per annum, provided they are able to convert nearly 600 tons of their surplus chlorine into bleaching powder. They also expect an appreciable reduction in the cost of production of their chemical caustic soda within a period of 18 months through a decrease in the cost of soda ash which will result from the proposed expansion of their productive capacity for that material, the adoption of wet calcination process and a reduction in the cost of lime by re-burning. Mettur Chemicals, Hindusthan Heavy Chemicals and Travancore-Cochin Chemicals have no plans for expansion; while, however, Mettur Chemicals do not expect to be able to increase their production above 3,300 tons per annum, Travancore-Cochin Chemicals are hopeful of increasing their output to their full capacity of 6,600 tons by 1956. Hindusthan Heavy Chemicals have estimated that their production by 1956 will be 1,200 tons, Calico Mills have applied for permission to set up a new unit in Bombay with a capacity of 1,600 tons per annum, but the application is still under consideration of Government. D.C.M. Chemicals,

whose capacity has increased to 4,620 tons in 1953 as compared with 2,100 tons in 1950, expect to increase their production to full capacity in the current year, provided additional power, which has been sanctioned, becomes available. They have also been permitted to increase their capacity further to 9,600 tons. Their total capacity is expected to increase to 8,880 tons and their actual production to 6,000 tons by 1956. The capacity of Rohtas Industries shown in the above statement is 1,650 tons. Their representative, however, informed us at the public inquiry that taking the capacity of their mercury cells into account, their total capacity should be taken as 2,100 tons for the future. Alkali and Chemical Corporation have made substantial additions to their capacity and expect to produce 4,815 tons in 1954 and 5,475 tons per annum from 1955 onwards. Thus, by 1956, the total capacity of the 8 units now in existence is expected to be 40,671 tons, excluding the additional capacity of 1,600 tons proposed to be set up by Calico Mills which has not yet been sanctioned. We understand that a new unit called Heavy Chemicals Ltd. is being installed at Tuticorin with a capacity of 2,000 tons per annum and is expected to come into production by January, 1955. The National Rayon Corporation have applied for permission to set up an electrolytic caustic soda plant in Bombay with an annual capacity of 4,000 tons, but the application has not yet been sanctioned. If the new units proposed by Calico Mills and National Rayon are sanctioned, there will, in all, be eleven caustic soda factories in the country, with a total capacity of 48,271 tons excluding the plants attached to the paper mills which have a total capacity of 4,805 tons. Taking the production of Mettur Chemicals, Calico Mills, D.C.M. Chemicals and Hindusthan Heavy Chemicals at 3,300 tons, 2,100 tons, 6,000 tons and 1,200 tons respectively and that of the other units as equal to their capacity, the total production of the existing 8 units outside the paper industry may be expected to increase to about 35,900 tons by 1956. Out of this, 29,300 tons will be electrolytic caustic soda and 6,600 tons chemical caustic soda. The corresponding quantity of chlorine produced will be about 26,000 tons. It is necessary to devise plans for utilising this large quantity of chlorine, which will increase by 6,720 tons when Heavy Chemicals Ltd. come into production and if the new units proposed by Calico Mills and National Rayon are allowed to be set up.

## 7.2. Bleaching Powder:—

7.2.1. Bleaching powder is produced by only three units, Mettur Chemicals, Tata Chemicals and Rohtas Industries. These were the only units producing bleaching powder in 1946 also. The total rated capacity of these three units is 8,170 tons per annum, but their actual production was 3,247 tons in 1950, 3,581 tons in 1951, 791 tons in 1952 and 1,945 tons in 1953. The following statement shows the rated capacity of the individual units and their actual production since 1950.

(Figures in tons)

Name of the Producer	Present annual rated capacity	Actual production			
		1950	1951	1952	1953
Tata Chemicals . . .	4,000	956	1,179	Nil	199
Mettur Chemicals . . .	1,980	1,615	1,842	745	1,547
Rohtas Industries . . .	2,190	676	560	46	199
<b>TOTAL . . .</b>	<b>8,170</b>	<b>3,247</b>	<b>3,581</b>	<b>791</b>	<b>1,945</b>

Owing partly to technical difficulties and partly to the non-availability of good quality limestone, indigenous bleaching powder is highly unstable and the producers have consequently found it extremely difficult to sell their product. Moreover, many of the consumers now find it economical to make bleach liquor themselves by purchasing liquid chlorine and caustic soda or lime, instead of bleaching powder. Bleach liquor is also produced in substantial quantities by some of the caustic soda factories themselves. There is, however, still an appreciable demand for bleaching powder from small textile mills, laundries as well as from public health authorities in small towns which do not have facilities to produce their own bleach liquor. The average imports of bleaching powder during the last three years (1950-51 to 1952-53) were as high as 5,730 tons. There is, therefore, scope for expanding domestic production of bleaching powder provided the quality is improved. Both Tata Chemicals and Mettur Chemicals have been making efforts in this direction and have informed us that they are now in a position to produce bleaching powder with 30 to 32 per cent. available chlorine. These firms have already submitted their samples to the Defence Department for testing. By 1956, Tata Chemicals expect to produce 1,800 tons for civilian use (the demand from the Defence Services being difficult to estimate at this stage), Mettur Chemicals 1,500 to 2,000 tons and Rohtas Industries 1,000 tons. The total production by 1956 is thus expected to be 4,300 to 4,800 tons. The quantity of chlorine which will be utilised in this way may be estimated at about 1,500 to 1,600 tons.

### 7.3. Liquid Chlorine:—

7.3.1. Liquid chlorine is produced by all the units except Travancore-Cochin Chemicals who propose to utilise their chlorine gas for production of hydrochloric acid and supply the latter to the ammonium chloride plant of Fertilisers and Chemicals (Travancore) Ltd., Alwaye. The rated capacity of the other seven units for production of liquid chlorine and their actual production since 1950 are shown below:—

(Figures in tons.)

Name of the producer	Present annual rated capacity	Actual production			
		1950	1951	1952	1953
1. Tata Chemicals . . .	1,320	142	282	247	329
2. Mettur Chemicals . . .	3,300	288	738	1,003	1,253
3. Calico Chemical Division . .	1,733	407	582	721	803
4. D.C.M. Chemicals . . .	4,620	978	1,508	2,156	1,537
5. Rohtas Industries . . .	1,650	65	219	128	262
6. Alkali & Chemical Corporation of India Ltd. . . .	3,762	1,790	1,827	1,872	2,512
7. Hindusthan Heavy Chemicals Ltd. . . . .	1,815	..	..	23	379
TOTAL . . .	18,200	3,670	5,156	6,124	7,075

The combined capacity of the seven units is 18,200 tons per annum and their production was 3,670 tons in 1950, 5,156 tons in 1951, 6,124 tons in 1952 and 7,075 tons in 1953. The extensions undertaken by D.C.M. Chemicals and Alkali and Chemical Corporation will result in increasing their capacity to 8,250 tons and 5,100 tons respectively. The total capacity for liquid chlorine will thus increase to 23,168 tons by 1956. If Calico Mills are allowed to put up a new plant, they will have additional capacity of 1,300 tons of liquid chlorine. By 1956, Tata Chemicals expect to produce 400 tons, Mettur Chemicals 1,500 tons, Calico Mills 850 tons, D.C.M. Chemicals 3,500 tons, Rohtas 500 tons and Alkali and Chemical Corporation 5,100 tons. Production of liquid chlorine by Hindusthan Heavy Chemicals may be estimated at 1,000 tons by 1956. The total production of liquid chlorine by the existing units (without taking into account the new plant proposed to be set up by Calico Mills) is thus expected to be 12,850 tons by 1956.

#### 7.4. Bleach Liquor:—

7.4.1. Bleach liquor is produced by only three units of which Rohtas Industries manufacture it only for consumption in their own paper factory. The rated capacity for production of bleach liquor and its actual production since 1950, expressed in terms of chlorine content, are shown below:—

(Figures expressed in tons of chlorine)

Name of the producer	Present annual rated capacity	Actual production			
		1950	1951	1952	1953
Mettur Chemicals . . .	336	90	266	178	197
Calico Mills . . .	866	842	996	786	775
Rohtas Industries . . .	660	334	385	408	445
TOTAL . . .	1,862	1,266	1,647	1,372	1,417

No increase is expected to take place in the capacity for production of bleach liquor at any of these factories and we estimate the production by 1956 at 1,500 tons of bleach liquor in terms of chlorine. Any additional production of bleach liquor would involve a corresponding curtailment in the estimated production of liquid chlorine or bleaching powder.

#### 7.5. Other Chlorine Products:—

7.5.1. The other chlorine products, at present produced by the caustic soda units are mainly hydrochloric acid, its derivatives like zinc chloride and ammonium chloride, and benzene hexachloride.

The following table shows the rated capacity of the various units for hydrochloric acid and their actual production since 1950:—

(Figures in tons)

Name of the producer	Present annual rated capacity	Actual production			
		1950	1951	1952	1953
1. Tata Chemicals . . . .	2,600	438	573	481	1,101
2. Mettur Chemical & Industrial Corporation . . . .	450	53	149	434	209
3. Calico Chemical Division . . *	1,100	368	253	371	340
4. D.C.M. Chemicals . . . .	4,290	476	774	1,136	739
5. Rohtas Industries . . . .	330	34	78	93	106
6. Travancore-Cochin Chemicals	17,800	..	..	*70	5,057
7. Alkali & Chemical Corporation of India Ltd. . . . .	400	260	427	498	432
8. Hindusthan Heavy Chemicals Ltd. . . . .	900	..	..	..	21
TOTAL	27,870	1,629	2,254	3,083	8,005

\*December 1952 only.

D.C.M. Chemical Works do not expect to maintain their production of hydrochloric acid when the D.D.T. factory in Delhi comes into production, as that factory will be producing hydrochloric acid in large quantities as a by-product. Travancore-Cochin Chemicals, on the other hand will be able to step up its production of hydrochloric acid to 15,840 tons by 1956 when the production of ammonium chloride comes into full swing. Alkali and Chemical Corporation have estimated their production in 1956 at 900 tons. If the other units maintain the same rate of output as in 1953, the total production of hydrochloric acid may amount to about 18,500 tons by 1956. The quantity of chlorine which will be utilised in this way may be estimated at 6,150 tons. In para. 6.2.4 above, the requirements of chlorine for hydrochloric acid and its derivatives have been placed at 5,400 tons based on the demand for hydrochloric acid. Any appreciable increase in the utilisation of chlorine for the production of hydrochloric acid will depend on the reduction in the freight rates recommended later in the report and on such measures as the producers themselves may take to stimulate the consumption of this acid.

7.6. It will be seen from the preceding sub-paragraphs that even when no account is taken of the extensions which have been applied for but not yet sanctioned, the total production of chlorine by the eight units now in existence is expected to be 26,000 tons by 1956



and of this 22,100 tons are likely to be utilised in the manufacture of the various products discussed above, as shown below:—

	Tons
(a) Liquid Chlorine . . . . .	12,850
(b) Bleaching powder . . . . .	1,600
(c) Bleach liquor . . . . .	1,500
(d) Hydrochloric acid and its derivatives like Zinc chloride and Ammonium chloride . . . . .	6,150
TOTAL . . . . .	22,100

It will be seen from the estimates of demand for chlorine given in paragraph 6.2.4 that there will be keen competition among various units for disposal of the chlorine products mentioned above. The balance of the chlorine will have to be utilised in the manufacture of miscellaneous products including insecticides like benzene hexachloride and D.D.T. unless the sales of the chlorine products turn out to be larger than at present envisaged. As regards benzene hexachloride, Alkali and Chemical Corporation have a capacity of 300 tons per annum, but their actual production was only 73 tons in 1952 and 67 tons in January-June 1953. No other unit produces benzene hexachloride at present, but as stated earlier, Tata Chemical's plant with a capacity of 1,500 tons is expected to come into production in the latter half of 1954, consuming about 3.75 tons of chlorine per day when working at full capacity. We recommend that Alkali and Chemical Corporation should try to utilise their full capacity for manufacture of benzene hexachloride.

7.7. The manufacturers have supplied us with details of the efforts made by them and of the further plans under consideration to secure fuller utilisation of chlorine. In order to facilitate the movement of liquid chlorine, Tata Chemicals have purchased more cylinders and have also taken steps to increase the rotation of cylinders. Similarly in order to increase the sales of hydrochloric acid, they have purchased rubber drums and additional carboys. They are also manufacturing a special grade of colourless hydrochloric acid for pharmaceutical purposes. They have set up a pilot plant for manufacture of ferric chloride from dry compressed chlorine. Rohtas Industries have been able to use most of their chlorine for bleaching of pulp and production of bagasse pulp in a new plant installed in 1951. D.C.M. Chemicals have organised a Sales Service Department for liquid chlorine and have appointed technical officers to go round to the paper and textile mills and to explain to them ways and means of utilising chlorine in place of bleaching powder. They have installed two pilot plants, one to study the use of hydrochloric acid for manufacture of active earths and another to manufacture di-calcium phosphate. The new D.D.T. factory in Delhi is expected to provide an additional outlet for about 1,400 tons of chlorine per annum. A second D.D.T. factory has been projected, but no decision has yet been taken about its location. We understand from Hindusthan Chemicals that in order to increase their sales of liquid chlorine, they have decided to purchase more cylinders as soon as possible. Alkali and Chemical Corporation which already produce hydrochloric acid and benzene hexachloride, are considering plans for manufacturing other products in which chlorine is used. Calico

Mills have also informed us that they are attempting to widen the market for their chlorine.

7.8. The extent to which the different units have been able to utilise the chlorine produced by them since 1950 is indicated in the following statement. The total production of chlorine by eight caustic soda factories is estimated at 8,479 tons in 1950, 10,842 tons in 1951, 10,645 tons in 1952 and 5,894 tons in 1953 (January-June).

Name of the producer	Percentage of chlorine utilised			
	1950	1951	1952	1953 (Jan./June)
1. Tata Chemicals . . . . .	71.5	81.9	77.7	89.1
2. Mettur Chemicals . . . . .	99.3	86.3	75.7	98.7
3. Travancore-Cochin Chemicals . . . . .	..	..	100	99
4. D.C.M. Chemicals . . . . .	62.2	68.0	94.1	86.3
5. Calico Mills, Chemical Division . . . . .	78.0	82.9	89.9	93.0
6. Rohtas Industries . . . . .	67.3	82.1	93.3	89.6
7. Alkali & Chemical Corporation of India . . . . .	100	100	100	100
8. Hindusthan Heavy Chemicals . . . . .	..	..	..	100

The small percentage of unutilised chlorine in the case of most of the units is due to the fact that the production of electrolytic caustic soda and chlorine is itself restricted by the limited market for chlorine. It is an unfortunate feature of this industry that while the production of caustic soda is far below the country's requirements, the production of chlorine is already in excess of domestic demand. Until the demand for chlorine increases to a sufficient extent, a large-scale expansion of the electrolytic section can only be effected at the cost of wasting large quantities of chlorine and thereby pushing up the cost of caustic soda. There is already a keen competition among the manufacturers to sell their liquid chlorine and some of them have been quoting prices which barely cover their costs. When the proposed extensions of some of the electrolytic plants are completed, the situation is likely to be further aggravated. In the Calcutta region, a single unit, namely, Alkali and Chemical Corporation, with its expanded capacity of 5,100 tons of liquid chlorine will be in a position to meet practically the entire demand estimated at about 5,000 tons per annum in that area. There is, however, another unit in the same region, namely, Hindusthan Heavy Chemicals with a capacity of 1,815 tons of liquid chlorine. Already D.C.M. Chemical Works have to send their liquid chlorine to distant markets like Bombay, Ahmedabad and Calcutta; when, by 1956, their additional capacity is brought into fuller use and their output of liquid chlorine increases to 3,500 tons, i.e., by 128 per cent. of their output in 1950, the problem of marketing may become still more difficult. When the new D.D.T. factory at Delhi comes into production it will consume some of the chlorine produced by D.C.M. Chemicals, but one outlet for chlorine, namely, hydrochloric acid, will be adversely affected. If the two new units proposed to be set up by Calico Mills and National Rayons in Bombay come into existence, Tata Chemicals and other existing units which at present supply chlorine in that area may have to seek new markets for a part

of their supplies. In view of these trends, it is necessary that the manufacturers of electrolytic caustic soda should intensify their efforts to develop new uses for chlorine. In foreign countries, large quantities of chlorine are used in the manufacture of products like carbon tetrachloride, barium chloride, and other metallic chlorides, poly-vinyl chloride, fertilisers, insecticides, dyestuff intermediates, chloroform, chlorinated rubber, solvents like ethylene glycol, trichloro-ethylene, etc. Secondly, Government should take special measures to encourage the development of industries which require large quantities of chlorine. Thirdly, in considering any applications for permission to set up new electrolytic plants, care should be taken to see that the increase in the output of chlorine is duly co-ordinated with the prospective demand for chlorine. Transport of liquid chlorine over long distances is difficult and expensive and hence, before allowing any new electrolytic plant to be set up in any region, due regard should be paid to the supply and demand position of chlorine in that region.

7.9. Production of caustic soda by the causticisation process does not give rise to any co-products, but the cost of production by this process is at present much higher than that by the electrolytic process. The higher cost is principally due to the cost of soda ash, the principal material, which is the product of a protected industry. Apart from the high cost of soda ash, it is possible to effect certain economies in the process of manufacture, but Tata Chemicals, the only producer of chemical caustic soda, have not been able to effect such economies so far. In the causticisation process, 1.6 tons of soda ash are required per ton of caustic soda produced and since production of soda ash is not sufficient to meet domestic requirements, the use of soda ash for production of caustic soda results in increased imports of soda ash accompanied by reduced imports of caustic soda. The ratio between the world prices of caustic soda and soda ash is, however, higher than 1.6 : 1 (ranging from 1.8 to 2 : 1) and hence it may be argued that the use of soda ash for production of caustic soda results in a net saving in foreign exchange. As against this saving, however, regard must be had to the unduly heavy burden likely to be placed on the domestic consumer, if the domestic prices of caustic soda were raised to a level which would be sufficient to cover the high cost of chemical caustic soda in the country. The present difference between the cost of production of chemical caustic soda and that of electrolytic caustic soda is so large that if the present production of chemical caustic soda were replaced by electrolytic caustic soda, the latter may continue to be cheaper than the former even if the additional chlorine produced has to be wasted and the cost of the wasted chlorine is loaded on to electrolytic caustic soda. In these circumstances, production of caustic soda from high-cost indigenous soda ash is not economical at present.

7.10. After the public inquiry, Tata Chemicals informed us that they were considering a scheme for manufacture of caustic soda from imported Magadi ash. By using Magadi ash, they would be able to make available for domestic consumption larger quantities of light ash now used for production of caustic soda, thereby enabling imports of light ash to be reduced and since the import prices of light ash are higher than those of Magadi ash, there would be a saving in foreign exchange, on account of the difference between the costs of imported light ash and Magadi ash as well as the reduction

in imports of caustic soda. Tata Chemicals maintained that if sufficient imports of Magadi ash were allowed to enable them to utilise their full capacity in the causticisation plant, their cost of production of chemical caustic soda would come down on account of the use of cheaper material and the reduction in overheads, and would be comparable with the average cost of production of electrolytic caustic soda. We recommend that this scheme be examined by the Development Wing of the Ministry of Commerce and Industry.

7.11. While it is true that at the present prices of indigenous soda ash, production of caustic soda from indigenous ash is uneconomical, the alternative of developing the industry on the electrolytic process is also not free from difficulties. If the entire quantity of 65,000 tons of caustic soda required to meet the domestic demand were produced by the electrolytic process, since 1 ton of chlorine is generated for every 1.127 tons of caustic soda produced by this process, the total quantity of chlorine produced would be well over 57,000 tons, whereas the present domestic demand for chlorine is estimated at only about 16,000 tons. It is not desirable to plan the production of caustic soda in such a manner as would lead to large quantities of chlorine going to waste, as this would push up the cost of production of caustic soda and make this industry unduly burdensome to the economy. Nor is it desirable to make the future development of this essential industry dependent entirely on the demand for chlorine. The most desirable course in these circumstances would be to take steps to bring down the cost of production of soda ash so as to make production of caustic soda by causticisation economical. This calls for an integrated plan designed to increase the production of both soda ash and caustic soda on a scale and in a manner which would bring about a substantial reduction in the cost of production of both these essential chemicals. We recommend that Government should take urgent steps to formulate such plan and put it into effect as early as possible. We understand that certain schemes have already been submitted to Government including one by Dr. M. D. Parekh of National Rayon Corporation, for the setting up of one or two large integrated plants for the production of both soda ash and caustic soda. We hope that these schemes will receive early consideration by Government.

### 8.1. Caustic Soda:

**8.1.1. Causticisation process.**—The principal raw materials required in this process are soda ash and lime. **Raw materials** Tata Chemicals, who are the only producer of caustic soda by this process, use their own soda ash, the cost of which at Rs. 278.15 per ton is high in relation to the world prices of soda ash. Lime is produced by burning of limestone with coke. Tata Chemicals have recently been using their rotary kiln instead of their vertical kiln for burning limestone as this has been found to yield a better quality of lime and has also enabled them to utilise, for a part of their requirements, limestone available in the Mithapur area which has a higher CaO content than Ranavav stone. Since limestone has to be crushed into small pieces before use in the rotary kiln, a larger quantity of limestone is wasted in this process, but the firm proposes to instal a new kiln in the near future which will be designed to utilise small stones and powder now unused. Tata Chemicals have to incur heavy freight charges on their supplies of

coal and coke and on a part of their supplies of limestone. Transport of coal and coke from Bengal or Bihar to Mithapur involves transshipment at Viramgam, Sabarmati or Agra East Bank, all three of which are congested and Tata Chemicals have consequently to obtain a part of their requirements of coal and coke by sea. The cost of coal for Tata Chemicals comes to Rs. 74-12-0 per ton by sea as compared with Rs. 42-1-3 by rail. Limestone is obtained partly from Ranavav and partly locally. The cost of limestone from Ranavav comes to Rs. 17.8 per ton, and that of local limestone to Rs. 11.5 per ton. The freight on limestone from Ranavav to Mithapur, a distance of 269 miles is Rs. 11-12-3 per ton. The distance will be reduced to 140 miles when the proposed railway line from Kakola to Gop is completed, leading to an appreciable reduction in freight on limestone.

8.1.2. *Electrolytic Process.*—The principal raw material required in this process is common salt. Tata Chemicals produce salt at their salt works situated at the site of their factory. Mettur Chemicals also produce salt at their works, situated at Adirampatnam at a distance of 254 miles, while D.C.M. Chemicals obtain their salt from Sambhar, Kharagoda or Dhrangadhra, Rohtas Industries from Sambhar and the other units from Kharagoda or the various salt works in Cutch or Saurashtra. The cost of salt delivered at the factory comes to Rs. 18-4-0 per ton for Tata Chemicals, Rs. 39-12-0 for Mettur Chemicals, Rs. 62-8-0 for Travancore-Cochin Chemicals, Rs. 40 for Calico Mills, Rs. 51-2-0 for D.C.M. Chemicals, Rs. 67-6-0 for Rohtas Industries and Rs. 59-8-0 for the two units in Calcutta. D.C.M. Chemicals have stated that Reshta salt from Sambhar contains sodium sulphate upto 4 per cent., as compared with less than 0.5 per cent. contained in Cutch or Saurashtra salt and that this defect could be removed if arrangements were made at the source to wash the salt. We understand that the Salt Experts Committee has recommended installation of washeries at Sambhar in order to make purer salt available for edible as well as industrial purposes. We recommend that the question of installing washing plants at Sambhar Salt Works should be given early consideration. Sodium sulphate can also be removed by treating the salt with barium chloride, but none of the units, except Travancore-Cochin Chemicals uses this material, partly because of its high cost and partly because of the fact that the units which do not use Sambhar salt do not find it necessary to remove the small percentage of sodium sulphate contained in the salt used by them. Travancore-Cochin Chemicals, who are the only producer of rayon grade caustic soda, require purer salt and, therefore, use barium chloride in their refining process. Barium chloride is imported from abroad and is subject to a duty at rates of 25.2 per cent., preferential and 37.8 per cent., standard. Travancore-Cochin Chemicals have requested exemption from this duty. We are, however, unable to support this request, since this may discourage the establishment of the barium chloride industry in the country and would be inconsistent with the recommendation made by us elsewhere in this Report that Government should assist the establishment of chlorine using industries in order to facilitate a fuller utilisation of the capacity of the electrolytic plants. Besides, we understand that Travancore-Cochin Chemicals are conducting experiments to ascertain whether natural barium carbonate, which is cheaper, could be used in place of barium chloride. In addition to sodium sulphate, two other impurities are found in common salt,

namely, calcium and magnesium. These are removed by addition of soda ash combined with lime or caustic lye. Small quantities of hydrochloric acid are used to neutralise the excess alkalinity of the brine resulting from the use of the purifying chemicals and from the admixture of salt returned after processing. Hydrochloric acid is obtained from the acid plant which forms part of the factory.

8.1.2.1. Coal and/or fuel oil are used for the production of electric power as well as for evaporation and fusion of caustic soda. The cost of coal delivered at the factory comes to Rs. 42 per ton for Tata Chemicals, Rs. 60 for Calico Mills, Rs. 25 for Alkali and Chemical Corporation, Rs. 38 for D.C.M. Chemicals, Rs. 38-12-0 for Mettur Chemicals, Rs. 50-12-0 for Travancore-Cochin Chemicals, Rs. 25 for Hindusthan Heavy Chemicals and Rs. 28 for Rohtas Industries. The electrolytic process involves large consumption of electric power. Mettur Chemicals, Hindusthan Heavy Chemicals and Travancore-Cochin Chemicals purchase electric power; Alkali and Chemical Corporation, D.C.M. Chemicals and Calico Mills generate a part of their requirements while the other two units generate the entire power required by them in their own plants. The number of units required per ton of caustic soda varies from 3,280 to 3,945, so that an increase of even 1 pie per unit would make a difference of Rs. 17 to Rs. 20 per ton of caustic soda. The cost of power varies widely from one unit to another. It is 1.25 anna per KWH for Tata Chemicals, 0.496 anna for Mettur Chemicals, 0.304 anna for Travancore-Cochin Chemicals, 1.154 anna for D.C.M. Chemicals, 0.596 anna for Alkali and Chemical Corporation, 0.917 anna for Rohtas Industries and 0.720 anna for Hindusthan Heavy Chemicals. In the case of units which either generate their own power or purchase power from thermal systems, the cost of power depends largely on the cost of coal. Travancore-Cochin Chemicals and Mettur Chemicals use hydro-electric power which is available at relatively low cost. Travancore-Cochin Chemicals at present have the benefit of a concessional rate for power. In future, however, the rate will be revised to 0.371 anna per KWH and this rate will be payable in any period on an assumed total consumption calculated at the peak daily consumption recorded in that period. Mettur Chemicals stated that their production was seriously hampered by the shortage of power. Since a fall in production of caustic soda in an important unit has repercussions on the supply and prices of this essential material all over the country, we recommend that the Government of Madras should give special consideration to the requirements of Mettur Chemicals for electric power.

8.1.2.2. Since the abolition of the excise duty on salt, a cess is levied at Re. 0-3-6 per maund on the production at Government salt works and Re. 0-2-0 per maund on the production at private salt works. In its last Report on this industry, the Tariff Board had stated that the grant of a rebate on this cess would assist the industry in reducing its cost of production. We understand that Government did not consider it necessary to implement this recommendation because the maximum prices fixed under the Supply and Prices of Goods Act for indigenous caustic soda were considered to be sufficiently remunerative for the industry. We, however, consider it highly desirable in the interests of the economy as a whole that the costs of production of caustic soda and allied products should be brought down by all possible means and that the mere fact that the

industry is at present receiving sufficient assistance by way of import control or other measures to enable it to cover its costs should not be used as an argument against granting it further assistance to reduce its costs. In dealing with the industry's request for a rebate on salt cess, as well as for concessions in regard to freight rates or power rates (which are discussed in para. 16 and the preceding sub-paragraphs of this paragraph), the important objective of lowering the cost of production of caustic soda and allied products should be kept in view. The matter should be viewed not only from the angle of the present capacity of the industry to bear the burden, but from the point of view of the desirability of minimising the burden on the consumer and of encouraging a rapid expansion of the industry so as to shorten the period for which it may need State assistance. The grant of protection to this industry as well as the present dependence on foreign monopolies for a substantial part of the domestic requirements involves a heavy burden on the consumer and the domestic industry has to expand a great deal before it can become fully competitive and the consumer can be relieved of this burden. We, therefore, consider that a re-orientation of the existing policy in regard to matters like the salt cess, the freight rates, the power rates etc. which are within the control of the State and have a significant bearing on the cost of production of the domestic industry, is urgently necessary. In particular, we recommend that the industry should be granted a rebate on the salt cess.

8.1.2.3. We are advised that salt produced at Kandla is of sufficient purity for manufacture of caustic soda. We recommend that the manufacturers should examine the suitability of this salt for production of caustic soda.

8.1.2.4. D.C.M. Chemical Works have stated that the present practice of packing salt in gunny bags results in additional cost to the extent of Rs. 5 to Rs. 7 per ton which would be avoided if salt were allowed to be transported in bulk. We understand that the Railway authorities have already examined this request but are unable to accede to it in view of the corrosive effect of loose salt on wagon plates.

## 8.2. Bleaching Powder:

8.2.1. The raw materials required for production of bleaching powder are chlorine gas and lime. Chlorine is a co-product of caustic soda. Limestone is available in plenty, but it contains impurities like iron and manganese and its calcium oxide content is also lower. Lack of good quality limestone was partly responsible for the difficulties so far experienced by the domestic manufacturers in producing bleaching powder of standard quality. In order to improve the quality of their product, Tata Chemicals have started producing their lime in their rotary kiln, instead of the vertical kiln.

9.1. *Caustic soda*.—Since the last inquiry held in 1950, the Indian Standards Institution has formulated standard specifications for caustic soda (solid and in solution) and bleaching powder. In formulating these specifications, I.S.I. has taken due account of the difficulties confronting the industry and, therefore, of the need for some relaxation in standards, wherever this could be done without detriment to the interests of the consuming industries. I.S.I. hoped that the specifications would permit the manufacturers to overcome their difficulties in producing materials which would be comparable in quality

**Quality of the indigenous products**

with those produced in other countries and that a revision of the standard could be undertaken within a few years. The evidence received by us at the present inquiry shows that the quality of indigenous caustic soda still does not compare favourably with that of the imported product. The Development Wing of the Ministry of Commerce and Industry has informed us that although a few firms are producing caustic soda of about 96 to 97 per cent. sodium hydroxide content (NaOH), the majority of the producers are still adhering to the standard specified in the I.S.I. specification, namely, 93.5 per cent. This is corroborated by the evidence received from the representatives of the soap, textile and paper industries. The soap manufacturers have pointed out that the excess salt in indigenous caustic soda leads to sweating of soap, particularly in the rainy season, and that the cost per ton of soap also goes up, since a larger quantity of indigenous caustic soda has to be used in saponification as compared with imported caustic soda. We understand that some of the manufacturers do not exercise sufficient care in inspecting the drums used for packing caustic soda. Caustic soda packed in rusty drums turns brownish and becomes unsuitable for soap making, as the iron content has an effect on the colour of the soap produced. Rayon manufacturers require caustic soda of very high degree of purity (98—99%) and Travancore-Cochin Chemicals are the only unit engaged in the production of this grade at present. The rayon manufacturers, however, have not yet had sufficient experience of the caustic soda produced by Travancore-Cochin Chemicals. Caustic lye suffers from the same defect as solid caustic soda in respect of the sodium chloride content. One of the soap manufacturers has pointed out that caustic lye transported in tank wagons over a long distance becomes dark in colour, if the wagons remain in transit for a considerable time. This, however, is probably due to the chemical action of the liquor on the tank wagon. We recommend that the manufacturers should take necessary steps to remove the defects pointed out by consumers in the quality and packing of their caustic soda.

9.2.1. *Bleaching powder*.—The I.S.I. specifications require that bleaching powder, unstabilised, when tested according to the prescribed method, should contain not less than 25 per cent. available chlorine at the time of manufacture and not less than 20 per cent. at the time of delivery. Imported bleaching powder is generally believed to contain 34 to 35 per cent. available chlorine, but a lower percentage has been prescribed for indigenous bleaching powder, in view of the difficulties experienced by indigenous producers in respect of both the quality of limestone and the technique of manufacture. The consensus of opinion among the consuming industries is that indigenous bleaching powder is highly unstable and that its strength goes on deteriorating in storage. Owing to its low chlorine content and high lime content, larger quantities have to be used than would otherwise be necessary and heavy deposits of lime are left on the bleached material. The Indian Paper Makers' Association have informed us that the chlorine content of Indian bleaching powder has shown some improvement since 1951, but it is still in the region of 24 to 26 per cent. The Development Wing of the Ministry of Commerce and Industry has stated that the indigenous product hardly contains more than 25 per cent. available chlorine. Tata Chemicals, on the other hand, have informed us that during the last few months, they have been able to improve the strength of their



bleaching powder to an average of 32 per cent. Mettur Chemicals similarly claim that their product has 30 per cent. available chlorine, but that it should be consumed within two months. We feel that it would be difficult for the trade to undertake the distribution of a product which has so short a life as two months. Municipalities in remote corners of the country which use bleaching powder for sanitation or water purification require a product which will remain stable for a longer period. Consumers like the Defence Services who have to buy bleaching powder in bulk and keep it in stock for issue in small packings would find it difficult to ensure that the product purchased by them is used within two months of receipt. We feel, therefore, that the manufacturers should continue to make further efforts to improve the strength of their bleaching powder as well as its stability. They should also improve the packing of their product. Although several large users now prefer to purchase bleach liquor or to make their own bleach liquor by purchasing liquid chlorine and lime (or caustic soda) there will continue to be an appreciable demand for bleaching powder in the foreseeable future, e.g., from the smaller textile mills, handlooms, laundries and Municipalities in small towns.

9.2.2. The representative of the Defence Ministry who attended the public inquiry suggested that the domestic industry should also undertake the production of high test hypochlorite with 70% or more available chlorine. Similar suggestion was also made by the representatives of the textile industry. Before the war, bleaching powder of this variety, under the trade name 'Perchlaron' used to be imported from Germany for use in textile and other industries. Both Tata Chemicals and Mettur Chemicals have produced high test hypochlorite on laboratory scale and have supplied samples to the Defence Ministry, but neither of them has yet set up the necessary plant for production on a commercial scale. We understand that the new unit to be set up by Heavy Chemicals Ltd., is going to take up the production of high test hypochlorite by the beginning of 1955. We recommend that the industry should be given all possible assistance in starting the production of this material on a commercial scale.

#### 10.1. Imports:

10.1.1. The following statements show the imports of caustic soda and bleaching powder (in quantity and value) during the years 1950-51, 1951-52, 1952-53 and 1953-54 (April to September, 1953):—

**Imports and import control policy**

##### (i) Caustic Soda

	Tons	Rs.
1950-51 . . . . .	21,993	1,00,54,224
1951-52 . . . . .	62,713	3,78,89,908
1952-53 . . . . .	25,552	1,45,71,171
1953-54 (April to September 1953) . . . . .	17,041	99,20,582

##### (ii) Bleaching Powder

	Tons	Rs.
1950-51 . . . . .	5,633	20,86,160
1951-52 . . . . .	8,810	40,42,881
1952-53 . . . . .	2,749	14,02,249
1953-54 (April to September 1953) . . . . .	2,114	11,02,648

10.1.2. It appears from the above statistics that the declared value per cwt. of caustic soda as recorded in the import statistics is higher

than the c.i.f. value reported to us by the principal importers. We recommend that the Collectors of Customs should examine the reasons for this discrepancy.

## 10.2. Import control policy.

10.2.1. *Caustic Soda*.—The import control policy of the Government of India in respect of caustic soda and bleaching powder since the licensing period July-December 1951 is described below:—

*July-December 1951*.—Licences were granted freely to all classes of applicants from all sources except South Africa subject to the conditions mentioned below:—

(i) Licences were granted as provisional in the first instance. On the strength of these provisional licences, orders could be placed and importers could open letters of credit in favour of their foreign suppliers. Licences were confirmed on importers producing along with the licence a copy of the order placed on the foreign suppliers together with the original acceptance of the order by the supplier, offering definite delivery of the goods.

(ii) Licences were to be confirmed within two months from the date of issue failing which they were to be treated as cancelled.

*January-June 1952 and July-December 1952*.—No licences were granted.

*January-June 1953*.—(i) Licences were issued to established importers to the extent of 10 per cent. of one half of their best year's imports during any one of the five financial years ending 1950-51.

(ii) Licences were granted to actual users for one half of their certified six monthly requirements only. If, however, actual users were eligible to apply as established importers by virtue of their direct imports when the item was subject to free licensing or was on O.G.L. during the basic year, the value of their quota licence was deducted from the value of their three months' requirements and the actual user licence was issued for the balance only. If the value of the quota licence exceeded the three months requirements, no actual user licence was granted. Actual users were required to state in their applications whether they were entitled to and were applying for a quota licence.

(iii) In the case of rayon grade caustic soda, actual users were given licences to the extent of their full six monthly requirements.

*July-December, 1953*.—The policy was the same as in the first half of 1953 except that the quota allowed to established importers was 35 per cent. Quota licences were not valid for the import of rayon grade caustic soda.

*January-June, 1954*.—The policy was the same as in July-December, 1953. Applications from actual users for rayon grade caustic soda were to be considered *ad hoc*.

*July-December, 1954*.—The quota for established importers has been increased to 20 per cent.; in other respects, the import policy has remained unchanged.

### 10.2.2. Bleaching Powder.

*July-December, 1951.*—Bleaching powder was included in the long term licensing scheme announced in June, 1950, according to which only soft currency licences were issued to actual users to the extent of their six monthly requirements and to established importers to the extent of 50 per cent. of one-half of their best year's imports.

*January-June, 1952.*—Licences were issued to established importers to the extent of 100 per cent. of one-half of their best year's imports.

*July-December, 1952.*—Licences were issued to established importers to the extent of 10 per cent. of one-half of their best year's imports.

*January-June, 1953.*—The policy was the same as in the preceding period. Licences were granted only for stabilised bleaching powder containing a minimum of 30 per cent. chlorine.

*July-December, 1953.*—Licences were issued to established importers to the extent of 25 per cent. of one half of their best year's imports. Actual users were also allowed to apply. Applications from Municipalities and State Governments for their requirements were considered *ad hoc*. Licences were valid only for imports of stabilised bleaching powder containing a minimum of 30 per cent. chlorine.

*January-June, 1954.*—The policy was the same as in the last period, except for the following changes: (i) licences issued for bleaching powder could also be utilised for the import of hychlorine (high test hypochlorite).

(ii) The licences were also subject to the condition that licence holders should send monthly returns to the licensing authorities with copy to the Industrial Adviser (Chemicals), Ministry of Commerce and Industry furnishing the following information:—

- (i) Quantity actually imported during the month, against licence;
- (ii) Sales made during the month;
- (iii) Person or persons to whom sales have been made; and
- (iv) Price at which the bleaching powder has been sold.

*July-December, 1954.*—The policy is the same as for the preceding licensing period, except that the quota for established importers has been fixed at 33 1/3 per cent.

11. Caustic soda is assessed to duty under I.C.T. item No. 28. Bleaching powder is free of duty. The relevant extract from the First Schedule to the Indian Customs Tariff (38th issue) is given on page 29.

**Ex isting rates of cus-  
toms duty**

# FIRST SCHEDULE TO THE INDIAN CUSTOMS TARIFF (38TH ISSUE)

Item No.	Name of the article	Nature of duty	Standard rate of duty	Preferential rate of duty if the Article is the produce or manufacture of			Duration of protective rates of duty
				The United Kingdom	A British Colony	Burma	
28.	Chemicals, Drugs and Medicines, all sorts not otherwise specified* Rs. As. Ps. Tariff values (per cwt.) Soda, Caustic 28 0 0 N.B.—The tariff values apply to articles packed in containers of not less than 14 lbs.	Preferential Revenue	Rate of duty actually charged at the time for such products of the United Kingdom or British Colonial origin plus 10 per cent. <i>ad valorem</i> plus 5 per cent. of the total duty.	26 per cent. <i>ad valorem</i> plus 5 per cent. of the total duty.	26 per cent. <i>ad valorem</i> plus 5 per cent. of the total duty.	10½ per cent. <i>ad valorem</i> .	
28.	(1) Bleaching paste and bleaching powder.	..	Free				

\*These are GATT items.

12.1. I.C.I. (India) Ltd., who are the largest importers of caustic soda and bleaching powder, have furnished us with the following data regarding the c.i.f. prices and landed costs of these materials:—

**C. i.f. prices and landed costs of caustic soda and bleaching powder**

	Caustic Soda (Solid, 98/99% in 661 lbs. drums, from U.K.)	Bleaching powder (Tropical stabilised, 34/35% available chlorine, in 3½ cwt. drums, from U.K.)
	Rs. per cwt. 21 11 7	Rs. per cwt. 24 6 0
C.i.f. price . . . . .		
Customs duty . . . . .	7 10 4 (@26.3% on a tariff value of Rs. 28 per cwt.)	..
Clearing charges . . . . .	0 9 0	0 9 0
Godown rent, insurance, etc.. . . . .	6 0 3	5 1 0
Landed cost, with duty. . . . .	35 15 2	30 0 0
Landed cost, without duty. . . . .	28 4 10	30 0 0

The customs duty on caustic soda is assessed on a tariff value of Rs. 28 per cwt. instead of the actual c.i.f. price which is lower. Further, I.C.I.'s landed costs include a special element, Rs. 6-0-3 per cwt. of caustic soda and Rs. 5-1-0 per cwt. of bleaching powder, for godown rent, insurance, etc. We understand that the firm considers it necessary to include this special element, on the ground that owing to restriction of imports, it has now to spread its overhead charges on a smaller turnover and the normal margin between the landed costs and the selling prices is, therefore, no longer sufficient to cover its overhead charges.

12.2. We understand that consumers importing caustic soda and bleaching powder through I.C.I. against actual user licences have to pay higher c.i.f. prices than those paid by I.C.I. on their direct imports. I.C.I. (India) have explained the difference as due to the fact that the c.i.f. prices charged to the consumers include their profit margin. We wish to draw Government's attention to this fact in order that the profits accruing to I.C.I. (India) from imports of caustic soda and bleaching powder may be accurately determined. The c.i.f. prices currently charged by I.C.I. (India) to large contract buyers holding actual user licences are Rs. 24 per cwt. less 2½ per cent., i.e., Rs. 23-6-0 per cwt. for caustic soda and Rs. 31-4-0 per cwt. less 2 per cent., i.e., Rs. 30-10-0 per cwt. for bleaching powder. Comparing these with the c.i.f. prices of I.C.I.'s direct imports, it would appear that the profit margin included in the c.i.f. prices charged to large consumers comes to Rs. 1-10-5 per cwt. of caustic soda and Rs. 6-4-0 per cwt. of bleaching powder. The difference between the landed costs of I.C.I.'s direct imports and their selling prices is Rs. 1-12-10 per cwt. of caustic soda and Rs. 1-8-0 per cwt. of bleaching

powder. The landed costs on the basis of the c.i.f. prices charged to large consumers work out as follows:—

	<i>Caustic soda</i> (Solid, 98/99 % in 66½ lbs. drums, from U. K.)	<i>Bleaching powder</i> (Tropical, stabilised, 34/35 % available chlorine, in 3½ cwt. drums, from U.K.)
	Rs. per cwt.	Rs. per cwt.
C. i. f. price . . . . .	23 6 0	30 10 0
Customs duty . . . . .	7 10 4	..
Clearing charges . . . . .	0 9 0	0 9 0
Landed cost, with duty . . . . .	31 9 4	31 3 0
Landed cost, without duty . . . . .	23 15 0	31 3 0

12.3. It will be seen that the landed costs without duty of caustic soda are Rs. 28-4-10 per cwt. for I.C.I.'s direct imports and Rs. 23-15-0 per cwt. for imports obtained by large consumers through I.C.I. against actual user licences. We propose to take the lower of these two figures, i.e., Rs. 23-15-0 per cwt. of caustic soda, for the purpose of comparison with the fair ex-works price of indigenous caustic soda. In the case of bleaching powder, the landed cost, without duty of I.C.I.'s direct imports is Rs. 30 per cwt., while that of imports made by large consumers against actual user licences is Rs. 31-3-0 per cwt. I.C.I.'s wholesale selling price for bleaching powder is Rs. 31-8-0 per cwt. We propose to take the lower landed cost without duty of Rs. 30 per cwt. relating to I.C.I.'s direct imports of bleaching powder for comparison with the fair ex-works price of indigenous bleaching powder.

13.1. We have examined the cost data collected by our Cost Accounts Officers for Tata Chemicals, Metturr Chemicals, Travancore-Cochin Chemicals and D.C.M. Chemicals. After discussion with the representatives of each firm separately, we have ascertained the actual costs incurred by three of the firms for a previous representative period and framed estimates for all of them for the future. As the companies desire that the details of their costs should be kept confidential, we are forwarding the reports of the Cost Accounts Officers as confidential enclosures. Only the salient points arising out of the cost examination are discussed in this paragraph. Actual costs have been ascertained for the year ended 30th June, 1953 for Tata Chemicals and D.C.M. Chemicals and for the year ended 31st March, 1953 for Metturr Chemicals. Travancore-Cochin Chemicals came into regular production only recently and hence only estimates of future costs have been made in their case. Electrolytic caustic soda is produced by all the four firms, chemical caustic soda by Tata Chemicals only and bleaching powder by Tata Chemicals and Metturr Chemicals. Production of electrolytic caustic soda during the periods for which actual costs were determined was 918 tons by Tata Chemicals, 3,189 tons by D.C.M. Chemicals and 2,038 tons by Metturr Chemicals. The average production of electrolytic caustic

**Commission's estimates of the costs of production and fair ex-works prices of the indigenous caustic soda and bleaching powder**

soda during the period 1954 to 1956 is expected to be 2,160 tons by Tata Chemicals, 5,000 tons by D.C.M. Chemicals, 3,100 tons by Mettur Chemicals and 5,500 tons by Travancore-Cochin Chemicals. D.C.M. Chemicals informed us that a portion of their new plant would start functioning from March 1954 and that the full scheme would be brought into commission from July 1954. Since this involves a substantial addition to capacity, the actuals for 1952-53 do not provide an adequate basis for estimating future costs in their case. We have, however, attempted an estimate of future costs on the basis of the information supplied by the firm. As regards chemical caustic soda, Tata Chemicals produced 1,598 tons during 1952-53 and are expected to produce 4,500 tons per annum on an average during 1954-1956. Tata Chemicals produced only 103 tons of bleaching powder during the year ended 30th June, 1953 and Mettur Chemicals 683 tons during the year ended 31st March, 1953. Average annual production of bleaching powder by these two firms from 1954 to 1956 is expected to be 1,485 tons and 1,500 tons respectively.

13.2. In estimating the future costs of production of electrolytic caustic soda, we have assumed that 2 tons of salt are required per ton of caustic soda, except in the case of Travancore-Cochin Chemicals which use Mercury Cells and consequently require 1.85 tons of salt per ton of caustic soda. In the case of D.C.M. Chemicals, the cost of salt is expected to rise to Rs. 60 per ton, i.e., by about Rs. 9 per ton as compared with 1952-1953, since the firm will have to obtain its requirements partly from Kharaghoda and partly from Sambhar instead of entirely from the latter source. In the electrolytic process, approximately 1 ton of chlorine is generated as a co-product for every 1.127 ton of caustic soda produced and hence the costs of production up to and including the cell house stage have been divided between chlorine and caustic soda in this proportion. Travancore-Cochin Chemicals are the only unit which utilise their chlorine exclusively for manufacture of hydrochloric acid for which chlorine can be taken out of the cell house without drying. In the case of the other units which manufacture several chlorine products, chlorine has to be dried before use. The cost of drying chlorine has, therefore, been included in the cell house costs in the case of all units except Travancore-Cochin Chemicals. Like chlorine, hydrogen also is produced in the process of manufacture. Both in respect of the quantity produced and value realised, however, hydrogen is of much less importance than chlorine and we have therefore, treated it as a by-product of caustic soda. Where hydrogen is largely used for manufacture of hydrochloric acid, credit has been taken on the basis of the cost of generation, but where it is largely used for manufacture of vanaspati, credit has been taken on the basis of the sale value of that product.

13.3. In calculating the future cost of production of chemical caustic soda, we have assumed a consumption of 1.6 ton of soda ash and 1 ton of lime per ton of caustic soda. The cost of soda ash has been taken at Rs. 281.37 per ton, inclusive of dissolving charges at Rs. 3.22 per ton. Tata Chemicals have started using dry lime produced with rotary kiln and the cost of this material has been taken at Rs. 75 per ton.

13.4. The future cost of bleaching powder has been calculated by taking the quantity of chlorine required at 0.35 ton and slaked lime

at 0.65 ton per ton of bleaching powder in the case of both Tata Chemicals and Mettur Chemicals.

13.5. Tata Chemicals and D.C.M. Chemicals generate their own electric power, but D.C.M. Chemicals will have to purchase additional power from outside to the extent of 40 per cent. of their total requirements as their power plant is being worked to full capacity. Tata Chemicals have re-designed their boilers so as to be able to use either coal or oil, depending on their prices and availability. At present, both Tata Chemicals and D.C.M. Chemicals produce their steam and electricity with coal. The cost of power produced by Tata Chemicals works out to 1.25 annas per KWH (including surcharge) and that produced by D.C.M. Chemicals 1.17 anna per KWH. The rate paid by D.C.M. Chemicals for power purchased from the Grid is 1.33 anna per KWH. Mettur Chemicals and Travancore-Cochin Chemicals purchase power from the hydro-electric systems in their States. The average cost per KWH comes to 0.496 anna in the case of Mettur Chemicals and 0.304 anna in the case of Travancore-Cochin Chemicals. From 1st April 1955, however, Travancore-Cochin Chemicals will have to pay for their power on the basis of the maximum demand in each year. This will result in an increase in the power cost to 0.371 anna per KWH. The consumption of electricity per ton of caustic soda varies widely from one unit to another; Tata Chemicals use 3,280 units, Mettur Chemicals 3,660 units, Travancore-Cochin 3,945 units and D.C.M. Chemicals 3,856 units. At the last inquiry, an average consumption of 3,500 units was assumed. Travancore-Cochin Chemicals use Mercury Cells and hence their figure is not strictly comparable with that of any of the other units. D.C.M. Chemicals have informed us that in actual working they have found it impossible to attain an average consumption of 3,500 units.

13.6. Depreciation has been allowed at income-tax rates on the written down value of the plants. In the case of Travancore-Cochin Chemicals which came into production only recently, and has not yet been assessed for income-tax, depreciation has been allowed at the rate of 10 per cent. of the original value of the Chemical plant, and 5 per cent. of that of the electrical plant and buildings. Interest on working capital has been allowed at  $4\frac{1}{2}$  per cent. per annum on an amount equal to three months' cost of production.

13.7. The details of the conversion charges and packing cost, and of the allocation of common expenses and the block among the various products in the case of each of the four units are given in the Cost Report.

13.8. During 1954-56, Tata Chemicals expect to be able to utilise their entire chlorine, Mettur Chemicals 86 per cent. of their chlorine, D.C.M. Chemicals 72 per cent. and Travancore-Cochin Chemicals 90 per cent. Travancore-Cochin Chemicals who convert their chlorine into hydrochloric acid have entered into an agreement with the new ammonium chloride factory at Alwaye to sell 96 per cent. acid at Rs. 52 per ton. They have, however, contracted to sell 30 per cent. acid to Indian Rare Earths, Ltd. at Rs. 140 per ton and their average realization from sales of 30 per cent. acid to other customers is Rs. 125 per ton. During 1954-56, they expect to sell 4,600 tons of 100 per cent. acid to the Ammonium Chloride Factory, 1,500 tons of 30



per cent. acid to Indian Rare Earths, Ltd. and 100 tons of 30 per cent. acid to other customers. While we recognise that an assured off take of a large quantity of hydrochloric acid by the new Ammonium Chloride Factory is helpful to the production of caustic soda by Travancore-Cochin Chemicals, the latter have not produced sufficient evidence to show that supply of hydrochloric acid at the exceptionally low rate mentioned above is essential to make the production of ammonium chloride economical. In estimating the fair ex-works price for caustic soda produced by this unit, therefore, we have taken credit for chlorine on the basis of its cost of generation. Some of the units have to incur extra expenditure for dumping their surplus chlorine. Both Mettur Chemicals and Travancore-Cochin Chemicals have to convert their surplus chlorine into bleach liquor before dumping it. We have taken into account the extra expenditure incurred by them in this connection.

13.9. At the previous inquiry, the Tariff Board distributed the cost of utilised chlorine over chlorine and chlorine products. Since the losses on account of wastage of chlorine arise mainly from the fact that the production of chlorine is in excess of demand and since a rise in the prices of chlorine or chlorine products is not likely to stimulate demand, we do not consider it reasonable to load such losses on the prices of chlorine or chlorine products. We, however, propose to treat this as a special element in the cost of production of caustic soda and would expect the manufacturers to do their utmost to find remunerative uses for the entire quantity of chlorine produced by them.

13.10. Some of the manufacturers claimed that the fair ex-works prices of caustic soda and bleaching powder should include an allowance for the freight disadvantage of the indigenous products in relation to the imported products. As regards caustic soda, we find that six out of the eight units do not suffer from any freight disadvantage and we consider, therefore, that no allowance need be made for this factor in estimating the fair ex-works price of caustic soda for the industry as a whole. In the case of bleaching powder, however, both Tata Chemicals and Mettur Chemicals are at a disadvantage in relation to the imported product in Bombay and Madras respectively which constitute their principal markets. This disadvantage is not offset to any material extent by their net advantage, if any, with respect to other centres. The actual pattern of sales of bleaching powder by both these units during the last two years was affected by conditions of shortage and would not afford much guidance for the future. The total sales of bleaching powder in these years were also small. Under normal conditions we consider that the freight disadvantage of Tata Chemicals with respect to bleaching powder could be taken as equal to the freight from Mithapur to Bombay, namely, Rs. 42.82 per ton and that of Mettur Chemicals as equal to the freight from Mettur Dam to Madras, namely Rs. 22 per ton.

13.11. The following statements show the fair ex-works prices of caustic soda and bleaching powder produced by the selected factories for 1952-53 and for 1954-56.

## STATEMENT I

*Fair ex-works prices of caustic soda during 1952-53: (Per ton).*

	Chemical Caustic Soda	Electrolytic Caustic Soda		
	Tata Chemicals	Tata Chemicals	Mettur Chemicals	D.C.M. Chemicals
	Rs.	Rs.	Rs.	Rs.
1. <i>Raw Materials</i>				
(a) Soda Lye . . . . .	486.77	..	..	..
(b) Milk of Lime . . . . .	70.20	..	..	..
(c) Lime . . . . .	1.37	..	..	..
(d) Salt . . . . .	..	31.76	78.01	110.06
(e) Purifying Chemicals . . . . .	..	16.53	7.39	1.49
TOTAL	558.34	48.29	85.40	111.55
2. Power and fuel . . . . .	60.72	369.09	294.36	355.30
3. Other conversion charges . . . . .	294.78	332.18	265.90	288.71
4. Depreciation . . . . .	52.16	52.46	168.22	118.52
TOTAL	966.00	802.02	813.88	874.08
5. Less credit for materials recovered . . . . .	9.74	238.55	205.70	276.82
NET TOTAL	956.26	563.47	608.18	597.26
6. Packing charges . . . . .	21.56	21.56	29.65	30.28
7. Interest on working capital . . . . .	9.79	5.67	5.55	5.50
8. Return on block . . . . .	113.15	113.79	175.42	84.68
9. Fair ex-works price exclusive of allowance for unutilised chlorine . . . . .	1,100.76	704.49	818.80	717.72
10. Cost of unutilised chlorine (per ton) . . . . .	..	11.67	45.50	4.90
11. Fair ex-works price per ton . . . . .	1,100.76	716.16	864.30	722.62
12. Fair ex-works price per cwt. . . . .	55.04	35.81	43.21	36.13

## STATEMENT II

*Fair ex-works prices of caustic soda during 1954—56 (Per ton).*

	Chemical Caustic Soda	Electrolytic Caustic Soda			
	Tata Chemicals	Tata Chemicals	Mettur Chemicals	T.C. Chemicals	C.M. Chemicals
	Rs.	Rs.	Rs.	Rs.	Rs.
<b>1. Raw Materials</b>					
(a) Soda Lye . . . .	450·19	..	..	..	..
(b) Lime . . . . .	75·00	..	..	..	..
(c) Salt . . . . .	..	30·00	79·31	114·33	120·00
(d) Purifying chemicals . .	..	21·02	6·91	25·81	1·49
<b>TOTAL</b> . . . . .	525·19	51·02	86·22	140·14	121·49
<b>2. Power and Fuel</b> . . . .	112·64	320·18	294·36	136·79	396·10
<b>3. Other conversion charges</b> .	100·34	194·25	200·20	155·60	250·24
<b>4. Depreciation</b> . . . . .	28·55	35·37	79·79	128·40	100·06
<b>TOTAL</b> . . . . .	766·72	600·82	660·57	560·93	867·89
<b>5. Less credit for materials re- covered</b> . . . . .	7·79	204·46	165·31	211·91	296·07
<b>NET TOTAL</b> . . . . .	758·93	396·36	495·26	349·02	571·82
<b>6. Packing charges</b> . . . .	24·39	24·39	29·65	40·50	33·00
<b>7. Interest on working capital</b> .	8·48	4·34	4·98	3·52	5·61
<b>8. Return on block</b> . . . .	43·72	52·72	109·89	95·70	82·10
<b>9. Fair ex-works price exclusive of allowance for unutilised chlorine</b> . . . . .	835·52	477·81	639·78	488·74	692·53
<b>10. Cost of unutilised chlorine</b> .	..	..	27·83	50·92	86·34
<b>11. Fair ex-works price per ton</b>	835·52	477·81	667·61	539·66	778·87
<b>12. Fair ex-works price per cwt.</b>	41·78	23·89	33·38	26·98	38·94

## STATEMENT III

*Fair ex-works prices of bleaching powder during 1952-53 and 1954-56  
(per ton)*

	Tata Chemicals		Mettur Chemicals	
	1952-53	1954-56	1952-53	1954-56
	Rs.	Rs.	Rs.	Rs.
<b>1. Raw Materials</b>				
(a) Limestone . . . . .	36.56	..	..	..
(b) Hydrated Lime . . . . .	..	56.51	120.45	90.84
(c) Chlorine . . . . .	146.80	85.43	65.10	63.90
<b>TOTAL</b> . . . . .	<b>183.36</b>	<b>141.94</b>	<b>185.55</b>	<b>154.74</b>
<b>2. Power and fuel</b> . . . . .	<b>75.28</b>	<b>19.44</b>	<b>11.52</b>	<b>11.52</b>
<b>3. Other conversion charges</b> . . . . .	<b>641.27</b>	<b>83.91</b>	<b>140.18</b>	<b>95.02</b>
<b>4. Depreciation</b> . . . . .	<b>359.06</b>	<b>43.73</b>	<b>69.56</b>	<b>31.70</b>
<b>TOTAL</b> . . . . .	<b>1,258.97</b>	<b>289.02</b>	<b>406.81</b>	<b>292.98</b>
<b>5. Less credit for materials recovered</b> . . . . .	..	..	1.89	1.89
<b>6. Net Total</b> . . . . .	<b>1,258.97</b>	<b>289.02</b>	<b>404.92</b>	<b>291.09</b>
<b>7. Packing charges</b> . . . . .	<b>74.76</b>	<b>75.52</b>	<b>94.93</b>	<b>94.93</b>
<b>8. Interest on working capital</b> . . . . .	<b>10.77</b>	<b>3.57</b>	<b>4.70</b>	<b>3.97</b>
<b>9. Return on block</b> . . . . .	<b>778.87</b>	<b>66.65</b>	<b>93.01</b>	<b>49.95</b>
<b>10. Fair ex-works price</b> . . . . .	<b>2,123.37</b>	<b>434.76</b>	<b>597.56</b>	<b>439.94</b>
<b>11. Freight differential</b> . . . . .	..	42.82	..	22.00
<b>12. Fair ex-works price per ton with freight differential</b> . . . . .	..	477.58	..	461.94
<b>13. Fair ex-works price per cwt.</b> . . . . .	..	23.88	..	23.09

13.12. It will be seen from the figures given in the preceding subparagraph that the costs of production and fair ex-works prices of caustic soda vary considerably from one unit to another. The future fair ex-works price of chemical caustic soda produced by Tata Chemicals comes to Rs. 41.78 per cwt. and that of their electrolytic caustic soda comes to Rs. 23.89 per cwt. The corresponding figures for electrolytic caustic soda produced by Travancore-Cochin Chemicals, D.C.M. Chemicals and Mettur Chemicals are Rs. 26.98, Rs. 38.94 and Rs. 33.38 per cwt. respectively. Tata Chemicals' cost of chemical caustic soda is high and their production of caustic soda by this process is small in comparison with the output of electrolytic caustic soda in the country. We consider, therefore, that our scheme of protection should be based on the cost of production by the electrolytic process only. Since, however, Tata Chemicals' cost of production of chemical caustic soda has been left out of account, the cost estimates made for their electrolytic caustic soda cannot be used for determining the fair ex-works price for the industry as a whole, since such estimates have been arrived at by allocating a proportion of the common expenses to the chemical caustic section. Among the other units, Travancore-Cochin Chemicals have worked only for a short period and adequate data about their actual working are not available. The fair ex-works price indicated for them is, therefore, based on certain technical assumptions and estimates. In the case of D.C.M. Chemicals, the estimate of fair ex-works price for the future is based on an output of 5,000 tons, and it takes into account the capital expenditure to be incurred by them on the expansion programme, which is designed to increase their capacity to 8,880 tons per annum by 1956. Various assumptions have had to be made in arriving at their cost of production under the altered circumstances. The fair ex-works price estimated for Mettur Chemicals also has certain special features; for example, the return on block per ton of caustic soda produced by them works out to a much higher figure as compared with the other three units. In these circumstances, none of the four units can be taken individually as representative of the industry. We have, therefore, worked out our estimates of the fair ex-works price for the industry as a whole on the basis of the data relating to Mettur Chemicals, D.C.M. Chemicals and Travancore-Cochin Chemicals in respect of the individual elements of cost of production. The fair ex-works price per ton of caustic soda as determined by us is given below:—

*Commission's estimate of the fair ex-works price of caustic soda for 1954—56 for the industry as a whole*

	Rs. per ton.
Raw materials . . . . .	116
Power and fuel . . . . .	276
Other conversion charges . . . . .	202
Depreciation . . . . .	103
<b>TOTAL . . . . .</b>	<b>697</b>
Less credit for materials recovered . . . . .	224
<b>NET TOTAL . . . . .</b>	<b>473</b>
Packing charges . . . . .	34
Interest on working capital . . . . .	5
Return on block . . . . .	96
Adjustment for unutilised chlorine . . . . .	55
<b>Fair ex-works price . . . . .</b>	<b>663</b>

Say, Rs. 33 per cwt.

13.13. As regards bleaching powder, we have framed our estimate of the fair ex-works price for the industry as a whole on the basis of the average of the estimates made for Tata Chemicals and Mettur Chemicals. Our estimate is given below:—

*Commission's estimate of the fair ex-works price of bleaching powder for 1954—56 for the industry as a whole*

	Rs. per ton
Raw materials . . . . .	148
Power and fuel . . . . .	16
Other conversion charges . . . . .	89
Depreciation . . . . .	38
	<hr/>
TOTAL . . . . .	291

Packing charges . . . . .	85
Interest on working capital . . . . .	4
Return on block . . . . .	58
Freight disadvantage . . . . .	32
Fair ex-works price . . . . .	<hr/> 470 <hr/>

Rs. 23.5 per cwt.

13.14. The estimates of fair ex-works prices adopted at the last inquiry were Rs. 27-2-2 per cwt. of caustic soda and Rs. 21-14-7 per cwt. of bleaching powder. These are not strictly comparable with the estimates now made, because the latter have been arrived at on a different basis.

14.1. The fair ex-works price of indigenous caustic soda as determined by us in paragraph 13.12 is compared below with the landed costs, ex-duty, of imported caustic soda adopted in paragraph 12.2.

	Rs. per cwt.
(1) Fair ex-works price . . . . .	33 0 0
(2) C. i.f. price . . . . .	23 6 0
(3) Landed cost, without duty . . . . .	23 15 0
(4) Difference between (1) and (3) . . . . .	9 1 0
(5) Difference as a percentage of the tariff value of Rs. 28 per cwt. . . . .	32.37%
(6) Existing rate of duty . . . . .	27.3%

It would appear from the above comparison that provided the existing tariff value is retained, a duty of 32.37 per cent. *ad valorem* is required to provide adequate protection to the domestic industry..

Imports of caustic soda, however, are at present restricted on balance of payments grounds and the restrictions are likely to remain in force during the next few years. Continuance of import restrictions is of special value to this industry, as it gives it a certain sense of security against any possible manipulations of prices or supplies by foreign suppliers. As a result of the present import restrictions the industry is already enjoying a sufficient measure of protection and no increase in tariff protection is, therefore, called for under the present circumstances. The import prices of caustic soda, of which the bulk of domestic requirements have still to come from abroad, are already high and a further increase in prices is likely to aggravate their adverse effects on the economy. In view of the desirability of minimising the burden on the consumer, we have examined whether the grant of subsidies would not be a suitable method of developing this industry, but we feel that at the present stage of its development, when strenuous efforts are needed on the part of the various units to reduce their costs, especially by finding new outlets for their surplus chlorine, the grant of subsidies may weaken the incentive for such efforts and thereby retard the progress of the industry. It may also prevent the necessary rationalisation of the internal organisation of the industry. Since, for these reasons, the grant of subsidies is not practicable at this stage, it is necessary that there should be at best no further increase in the burden on the consumer through an upward revision of the duty, and that the domestic industry should be given the necessary assistance by means of import control, so long as such control is in any case maintained for balance of payments reasons. In the case of a material like caustic soda, it is possible to ensure that large consumers will obtain their requirements of the imported product through the principal importers at prices which bear a fair relation to the landed costs. We, therefore, recommend that the existing preferential duty of 27.3 per cent. *ad valorem* on caustic soda of U.K. origin should be converted into a protective duty and that this duty should continue to be assessed on the existing tariff value of Rs. 28 per cwt. The standard rate of duty on caustic soda may be fixed in accordance with the terms of the relevant Trade Agreements. If, at any time, it is found necessary to change the tariff value, the rates of duties should be so adjusted as to restore the quantum of tariff protection afforded to the domestic industry by the present rates of duties.

14.2. The following statement gives a comparison of the fair ex-works price of indigenous bleaching powder as determined by us in paragraph 13.13 with the landed cost of imported bleaching powder adopted in paragraph 12.2.

	Rs. per cwt.
(1) Fair ex-works price . . . . .	23 8 0
(2) C.i.f. price . . . . .	24 6 0
(3) Landed cost without duty . . . . .	30 0 0
(4) Difference between (1) and (3) . . . . .	—5 8 0
(5) Existing rate of duty . . . . .	free

The future fair ex-works price of indigenous bleaching powder as determined by us is lower than the c.i.f. price of imported bleaching powder and it would, therefore, appear that the indigenous industry needs no protection against foreign competition in respect of this

product. The domestic industry, however, has only just succeeded in improving the quality of its bleaching powder and our estimate of the fair ex-works price is based, not on its present costs of production but on what the costs are expected to be if the industry is given adequate protection and is thereby enabled to find a sufficiently large market for this product. The present cost of production of indigenous bleaching powder is very high, mainly because actual production is small in relation to rated capacity. Indigenous bleaching powder was hitherto not upto the requisite standard and there is consequently considerable prejudice on the part of consumers about its quality. The industry needs assistance for some period to overcome this prejudice. Further, manufacture of bleaching powder offers an important outlet for chlorine and it is essential for the progress of the electrolytic caustic soda industry to afford all possible encouragement to the development of chlorine using industries. Moreover, while it is recognised that bleaching powder is an essential material, the existing policy of allowing imports free of duty cannot be of any permanent benefit to the consumer. As pointed out in paragraph 11 above, although no import duty is levied on bleaching powder, the landed cost of I.C.I.'s direct imports, excluding clearing charges, exceeds the c.i.f. price by as much as Rs. 5-1-0 per cwt., i.e., by about 20.8 per cent. of the c.i.f. price, while the profit margin charged by I.C.I. on c.i.f. prices of imports made through them by large consumers is Rs. 6-4-0 per cwt., i.e., about 25.6 per cent. of the c.i.f. price of I.C.I.'s direct imports. The object of allowing duty free imports, which is to give the domestic consumer the benefit of world prices, is thus defeated and we, therefore, see no advantage in continuing the present policy. It is only by the development of a local industry for the production of this essential material that the domestic consumer can be given permanent relief from the high prices at present charged by foreign suppliers. We, therefore, recommend that the bleaching powder industry should be granted protection and that a protective duty of 15 per cent. *ad valorem* should be imposed on this product. Further, imports of bleaching powder should be restricted as domestic production expands and the quality of the indigenous product shows further improvement. We have no doubt that given due encouragement the bleaching powder industry can develop rapidly in this country and become an important adjunct of the domestic caustic soda industry.

14.3. We recommend that the above scheme of protection for caustic soda and bleaching powder should remain in force upto 31st December, 1958. The industry is at present in a process of development and we feel that it should be assured of protection for a reasonably long period.

15.1. By their notification No. 7(8)-PC/50, dated 18th May, 1951, issued under section 4 of the Supply and Prices of Goods Act, 1950, the Government of India in the Ministry of Commerce and Industry fixed the maximum price for indigenous caustic soda at Rs. 40-6-0 per cwt. f.o.r. Bombay, i.e., at the same rate as had been previously fixed for imported caustic soda, although the Tariff Board's estimate of the fair selling price of indigenous caustic soda was only Rs. 27-2-0 per cwt. In their Resolution No. 32(1)-T.B./51, dated 18th May, 1951, Government stated

**Financial effects of uniform controlled prices for indigenous and imported caustic soda**



that indigenous manufacturers who would benefit by the fixation of a uniform maximum price for indigenous and imported caustic soda should take advantage of the arrangement to strengthen their financial position and reserves and that this would be taken into account when considering any claim from the industry in future for the grant of protection or assistance. The notification referred to above has since lapsed and the prices of caustic soda are no longer subject to control.

15.2. We have obtained from indigenous manufacturers details of the prices charged by them for caustic soda since May 1951 when uniform maximum prices were fixed for indigenous and imported caustic soda (See Appendix IV). We find that the wholesale price of caustic soda remained at the maximum rate fixed by Government only for a short period and declined from March 1952 onwards. In 1952, the wholesale price of caustic soda ranged between Rs. 28-9-3 and Rs. 40-2-0 per cwt. and in 1953, between Rs. 25-4-5 and Rs. 37-7-4 per cwt. At the time of the public inquiry, the price varied from Rs. 32-8-0 to Rs. 36-8-0 per cwt. Although throughout this period, the wholesale price of caustic soda has ruled higher than the fair selling price of Rs. 27-2-0 per cwt. determined by the Tariff Board with the exception of a lower price of Rs. 25-4-5 quoted by D.C.M. Chemicals only during September, 1953, we do not think that the profits earned by the industry can be ascertained merely on the basis of the difference between the Board's estimate of the fair ex-works price and the actual price charged by the various units, even if allowance is made for the selling and distribution expenses not included in the Board's estimate. It has not been possible for us to determine the actual cost of production in each unit since 1951 to date; but the evidence collected by us for a few representative units shows that the actual cost of production varied widely from one unit to another, depending mainly on the percentage of capacity utilised and the realisation from chlorine produced. We have examined the balance sheets of the various companies concerned, but find that since the data given in their balance sheets relate to the entire group of products manufactured by them, it is not possible to determine the profits from caustic soda alone from such data. While, for these reasons, it has not been possible to determine the actual profits earned by the caustic soda industry since 1951, there is no doubt that the industry as a whole has derived appreciable benefit from the import control on caustic soda and the resulting rise in the prices of the imported product. The benefit has been greater for units like D.C.M. Chemicals and Calico Mills who were able to find a market for a large proportion of their chlorine. They were also able to recover a substantial margin of profit on their sales of caustic lye to which the maximum prices fixed by Government did not apply. Alkali and Chemical Corporation were in a singularly happy position, since they were able to find a market for most of their chlorine and could also sell all their caustic soda in the form of lye in their own region. Government desired that indigenous manufacturers should take advantage of the rise in the prices of caustic soda to strengthen their financial position and reserves. We find that the leading units in the industry have largely complied with this directive. Tata Chemicals have increased their allocations to the Depreciation Fund, D.C.M. Chemicals and Alkali and Chemical Corporation have made substantial additions to their capacity and Calico Mills have applied for permission to set up a new unit in Bombay. On the whole, Government's import control and price

control policies have been of benefit to the domestic industry and the leading units in the industry have utilised this assistance to strengthen their financial position.

15.3. As stated above, the prices of caustic soda are not subject to control at present. Government, however, have powers under section 18G of the Industries (Development and Regulation) Act to regulate the prices of caustic soda and allied products. In order that the interests of the consumer may be adequately safeguarded in future, we recommend that Government should keep a careful watch over the prices of caustic soda (both solid and liquid) and bleaching powder and, if necessary, take suitable measures under the Industries (Development and Regulation) Act to regulate them.

16.1. *Freights and transport facilities.*—The industry has made various representations regarding the freight rates on caustic soda and chlorine products and on the raw materials required for their manufacture, as well as facilities for the movement of these products, which are briefly summarised below:—

(a) The manufacturers have complained about the existing freight rate on caustic soda and particularly about the unduly large difference between the freights for wagon loads and smalls for long distances. For example, the freight from Mithapur to Allahabad is Rs. 44-12-8 per ton for wagon-loads and Rs. 89-6-0 for smalls. Similarly, the freight from Alwaye to Bombay is Rs. 44-13-0 per ton for wagon loads and Rs. 90-5-0 for smalls. Coastal freights are also high in relation to ocean freights. The coastal freight on caustic soda from Okha to Cochin, a distance of 1,000 miles is Rs. 45-8-0 per ton, while the ocean freights from U.K. to India a distance of 6,300 miles and from U.S.A. to India, a distance of 9,300 miles are Rs. 69-1-11 and Rs. 129-1-0 respectively. Bleaching powder imported from U.K. to India bears a freight of Rs. 73-12-9 per ton, while the coastal freight on this material from Okha to Cochin is Rs. 81 per ton. In the Railway tariff, no wagon load scale has been prescribed for bleaching powder and hence smalls as well as wagon loads are charged on the same scale. Freights and other charges levied by railways on short distance traffic are particularly onerous to a unit like Tata Chemicals which is situated at a distance of 7 miles from the Okha port and has to despatch a good proportion of its output through Okha to other port towns like Bombay, Cochin, Madras and Calcutta which are the main centres of consumption. The freight on caustic soda for the short distance from Mithapur to Okha is as high as Rs. 3-15-6 per ton and that on bleaching powder Rs. 4-13-1 per ton.

(b) A large proportion of caustic soda is at present marketed in solid form. If facilities were provided for transport of caustic soda in liquid form (i.e., caustic lye containing 50 per cent. caustic soda), the cost of fusion would be saved and there would also be considerable economy in the consumption of mild steel sheets now used for packing. The cost of caustic soda to the consumer could thus be brought down by more than Rs. 100 per ton. We understand that when caustic lye has to be transported over long distances, the difference between the freights on caustic lye and on solid caustic soda becomes so large as to more than offset the difference in their prices.

No wagon load rates have been prescribed for transport of caustic lye in tank wagons, with the result that caustic lye even when transported in tank wagons is charged at class 4 'smalls' rates. Since for long distances the rates for smalls are double the wagon load rates and caustic lye contains only 50 per cent. caustic soda, the effective rate for caustic soda as lye works out to 4 times the wagon load rate for solid caustic soda. The rate from Alwaye to Bombay for caustic lye transported in tank wagons, including the charges for return haulage, works out to Rs. 194-10-0 per ton of net caustic soda as against the wagon load rate of Rs. 44-13-0 per ton of solid caustic soda. Thus, the difference in freight on caustic lye and solid caustic soda from Alwaye to Bombay is Rs. 150 per ton, while the possible difference in price is only in the neighbourhood of Rs. 100 per ton. The industry has also asked for a larger number of tank wagons to be made available for transport of caustic lye.

(c) The manufacturers have also complained about the freight rates on liquid chlorine and hydrochloric acid and have requested that special tank wagons should be provided for transport of liquid chlorine to bulk users like paper mills. Liquid chlorine is included along with sulphuric acid in class 14 and hydrochloric acid in class 15. The manufacturers maintain that since liquid chlorine is transported in steel cylinders which are periodically tested and certified by Government, it should be charged a lower rate than sulphuric acid. Tata Chemicals have pointed out that inclusion of hydrochloric acid in class 15 when sulphuric acid is included in class 14, is anomalous and contrary to the practice followed by the railway authorities in U.K., U.S.A. or other countries. D.C.M. Chemicals have stated that hydrochloric acid could replace sulphuric acid to a large extent, if the freight rates on the former were suitably adjusted. According to the figures furnished by them for a distance of 700 miles, hydrochloric acid has to pay a freight (including terminal tax) of Rs. 270 per ton of naked acid (i.e. 1.6 ton gross), while the freight (including terminal tax) on sulphuric acid is Rs. 189 per ton of naked acid (i.e., 1.47 ton gross). 2.2 tons of hydrochloric acid are required for every ton of sulphuric acid and hence the freight on hydrochloric acid has to be suitably reduced in relation to the freight on sulphuric acid to put the two materials on par with each other. Since sulphuric acid is made from imported sulphur, increased use of hydrochloric acid in place of sulphuric acid will result in saving in foreign exchange or making larger supplies of sulphur available for manufacture of fertilizers or other essential uses. Travancore-Cochin Chemicals, who are the largest producer of hydrochloric acid, have also drawn attention to the high incidence of railway freights on this product. They have pointed out that owing to the stringent packing conditions stipulated by railways, the weight of containers equals that of acid, with the result that for transporting one ton of acid, freight has to be paid for 2 tons at class 15, i.e., the highest rates. The return of empty containers involves additional freight at class 2 rates. As against a price of Rs. 150 per ton of naked acid f.o.r. Alwaye charged by Travancore-Cochin Chemicals to consumers other than Rare Earths and the Ammonium Chloride Factory, the freight from Alwaye to Bombay works out to Rs. 557 and from Alwaye to Calcutta Rs. 694 per ton naked acid inclusive of the freight on empty containers. Even for the short distance of 116 miles from Alwaye to Coimbatore, the freight comes

to Rs. 84 per ton of net acid. Travancore-Cochin Chemicals request that since the existing freight rates have made hydrochloric acid unattractive to consumers and thereby hampered fuller utilisation of chlorine, a substantial reduction should be made in these rates and packing in lighter and more modern types of containers (e.g., solid rubber drums) should be allowed.

(d) Most of the electrolytic plants are located at long distances from the salt works and consequently the freight on salt constitutes a significant element in their costs. They have, therefore, asked for concessional freight rates (both rail and sea) on salt. Tata Chemicals are favourably located with respect to salt, but have disadvantages in regard to limestone and fuel. They have therefore requested the construction of a direct line from Mithapur to Ranavav (the place from which they obtain their limestone) and a reduction in the freight on furnace oil from Okha to Mithapur. Provision of better port facilities at Okha and road facilities from Mithapur to Jamnagar, Porbunder and Okha would also be of substantial assistance to them.

16.1.1. We see considerable force in the case put forward by the industry and feel that a review of both the railway and coastal freights on caustic soda, chlorine and chlorine products (particularly hydrochloric acid) is urgently necessary. Caustic soda is an essential industrial material and its cost to the consumer should be brought down by all possible means. The high cost of caustic soda in the country is retarding the growth of several important industries. It is equally necessary to remove all possible impediments in the way of a fuller utilisation of chlorine on which depends the development of an important section of this industry. Both these considerations should be given due weight in any re-examination of the freight rates on these materials. In this connection, we wish to draw the attention of the transport authorities to our remarks in para. 8.1.2.2. above which have an important bearing on this problem. We also recommend that the industry should be provided with adequate transport facilities for its raw materials and finished products.

16.2. *Exports of liquid chlorine.*—We understand from Tata Chemicals, who have been trying to build up an export market for their liquid chlorine, that foreign buyers are sometimes prepared to send empty cylinders of their own for transport of liquid chlorine. Under the existing customs procedure, however, imports of empty cylinders even in this case are subject to import duty, only seven-eighths of which is refundable on re-export of the cylinders. We recommend that in order to encourage exports of liquid chlorine, the customs procedure should be revised to permit empty cylinders provided by foreign buyers to be brought into the country without payment of duty, on the condition that they will be re-exported within a specified period.

17. Our conclusions and recommendations may be summarised as under:—

(i) The annual domestic demand for caustic soda is estimated at 65,000 tons at present and 94,000 tons by 1956. The present domestic consumption of chlorine is estimated at 16,000 tons and the consumption by 1956 at 24,000 tons. (Paragraphs 6.1.2, 6.2.1 and 6.2.4).

**Summary of conclusions and recommendations**

(ii) The total annual rated capacity of 8 caustic soda factories is 34,512 tons at present. This is expected to increase to 40,671 tons by 1956. In addition, 4 paper mills have caustic soda units with a total annual capacity of 4,805 tons. A new unit with a capacity of 2,000 tons is under construction and plans for setting up two more units with a total capacity of 5,600 tons are under consideration. (Paragraphs 7.1.1., 7.1.2. and 7.1.3.).

(iii) Total production of caustic soda, inclusive of the production by the 4 paper mills for their own consumption amounted to 13,485 tons in 1950, 16,015 tons in 1951, 16,665 tons in 1952 and 22,831 tons in 1953. On the basis of their present production programmes the total production of caustic soda by the 8 existing units is expected to be 35,900 tons by 1956. (Paragraphs 7.1.1. and 7.1.3.).

(iv) The annual rated capacity of three factories for the production of bleaching powder is 8,170 tons at present, and their actual production amounted to 3,247 tons in 1950, 3,581 tons in 1951, 791 tons in 1952 and 1,945 tons in 1953. By 1956, the three factories expect to produce 4,300 to 4,800 tons of bleaching powder in all. (Paragraph 7.2.1.).

(v) The total quantity of chlorine produced by 8 caustic soda factories is estimated at 8,479 tons in 1950, 10,842 tons in 1951, 10,645 tons in 1952 and 5,894 tons in 1953 (January-June). While the demand for chlorine by 1956 is estimated at 24,000 tons only, production of chlorine by 8 caustic soda factories alone is expected to increase to 26,000 tons by 1956, leaving a surplus of 2,000 tons. The actual surplus will be much larger when account is taken of the production of chlorine by paper mills and by the new units. (Paragraphs 6.2.4 and 7.8.).

(vi) The manufacturers of electrolytic caustic soda should intensify their efforts to develop new uses for chlorine. (Paragraph 7.8.).

(vii) Government should take special measures to encourage the development of industries which require large quantities of chlorine. (Paragraph 7.8.).

(viii) Transport of liquid chlorine over long distances is difficult and expensive and hence before allowing any new electrolytic plant to be set up in any region, due regard should be paid to the supply and demand position of chlorine in that region. (Paragraph 7.8.).

(ix) Alkali and Chemical Corporation should try to utilise their full capacity for the manufacture of benzene hexachloride. (Paragraph 7.6.).

(x) Government should examine the scheme of Tata Chemicals for manufacture of caustic soda from imported Magadi ash. (Paragraph 7.10.).

(xi) The domestic production of caustic soda is sufficient to meet only 35 per cent. of the domestic requirements at present. The industry will, therefore, have to expand considerably before the country can become self-sufficient in respect of this essential material. Nearly 90 per cent. of the present production of caustic soda is by the electrolytic process. The scope for expansion of the

electrolytic section, however, is severely restricted owing to the relatively small demand for chlorine. The alternative process of causticisation is free from this drawback, but is at present uneconomical because of the high cost of indigenous soda ash. In order that production of caustic soda by causticisation may become economical, Government should formulate, and put into effect as early as possible, an integrated plan for expanding the production of both soda ash and caustic soda. (Paragraphs 6.1.2, 7.1.1, 7.9 and 7.11.).

(xii) The question of installing washing plants at the Sambhar Salt Works should be given early consideration. (Paragraph 8.1.2.).

(xiii) The Government of Madras should give special consideration to the requirements of Mettur Chemical and Industrial Corporation for electric power. (Paragraph 8.1.2.1.).

(xiv) The industry should be granted a rebate on the salt cess. The industry's requests for this and other similar concessions should be considered, not only from the angle of the present capacity of the industry to bear the burden but from the point of view of the desirability of minimising the burden on the consumer and of encouraging a rapid expansion of the industry so as to shorten the period for which it may need State assistance. (Paragraph 8.1.2.2.).

(xv) The manufacturers should examine the suitability of salt produced at Kandla for production of caustic soda. (Paragraph 8.1.2.3.).

(xvi) The manufacturers should take suitable steps to remove the defects pointed out by consumers in the quality and packing of their caustic soda. (Paragraph 9.1.).

(xvii) The manufacturers should continue to make further efforts to improve the strength and stability of their bleaching powder. (Paragraph 9.2.1.).

(xviii) The industry should be given all possible assistance in starting the production of high test hypochlorite. (Paragraph 9.2.2.).

(xix) It appears that the declared value per cwt. of caustic soda as recorded in the import statistics is higher than the c.i.f. value reported to us by the principal importers. We recommend that the Collectors of Customs should examine the reasons for this discrepancy. (Paragraph 10.1.2.).

(xx) The c.i.f. prices charged by I.C.I. (India) Ltd. for caustic soda and bleaching powder imported through them by consumers against actual user licences are higher than those at which these materials are imported by I.C.I. (India) Ltd. themselves. Government's attention is drawn to this fact in order that the profits accruing to I.C.I. (India) Ltd., from imports of caustic soda and bleaching powder may be accurately determined. (Paragraph 12.2.).

(xxi) The fair ex-works prices for caustic soda and bleaching powder for the period 1954—56 have been estimated at Rs. 33 per cwt. and Rs. 23.5 per cwt. respectively. (Paragraphs 13.12. & 13.13.).

(xxii) On the basis of the present tariff value of Rs. 28 per cwt., a duty of 32.37 per cent. *ad valorem* is required to provide adequate protection to the domestic industry. However, in view of the desirability of maintaining the prices of caustic soda at a reasonable level, the existing preferential duty of 27.3 per cent. *ad valorem* on caustic soda of U.K. origin should be converted into a protective duty, the standard rate of duty being fixed in accordance with the terms of the relevant trade agreements, and the industry should be given additional assistance by means of import control, so long as such control is in any case maintained for balance of payments reasons. If at any time it is found necessary to change the tariff value, the rates of duty should be so adjusted as to restore the quantum of tariff protection afforded to the domestic industry by the present rates of duty. (Paragraph 14.1.).

(xxiii) The fair ex-works price for indigenous bleaching powder for 1954—56 as determined by us is lower than the c.i.f. price of imported bleaching powder. The actual production of bleaching powder, however, is still very low and consequently the present costs of production are very high. There is also considerable prejudice on the part of consumers about the quality of the indigenous product. A protective duty of 15 per cent. *ad valorem* should, therefore, be imposed on bleaching powder. (Paragraph 14.2.).

(xxiv) The protective duties recommended above should remain in force upto 31st December, 1958. (Paragraph 14.3.).

(xxv) The fixation of uniform controlled prices for indigenous and imported caustic soda under the Ministry of Commerce and Industry Notification No. 7(8)-P.C./50, dated 18th May, 1951 issued under section 4 of the Supply and Prices of Goods Act 1950 was of benefit to the domestic industry. The leading units in the industry have utilised this assistance to strengthen their financial position. (Paragraph 15.2.).

(xxvi) Government should keep a careful watch over the prices of caustic soda (both solid and liquid) and bleaching powder and, if necessary, take suitable measures under the Industries (Development and Regulation) Act to regulate them. (Paragraph 15.3.).

(xxvii) The railway and coastal freights on caustic soda and chlorine products, particularly hydrochloric acid, should be reviewed, in order to minimise the burden on the consumer and also to assist the fuller utilisation of chlorine which is vital to the development of the electrolytic section of the caustic soda industry. The industry should also be provided with adequate transport facilities for its raw materials and finished products. (Paragraph 16.1.1.).

(xxviii) In order to encourage exports of liquid chlorine, empty cylinders provided by foreign buyers should be permitted to be brought into the country without payment of duty on condition that they will be re-exported within a specified period. (Paragraph 16.2.).

18. We wish to thank the representatives of producers, importers and consumers and the various Government Departments who furnished us with valuable information and gave evidence before us. Our thanks are also due to Shri N. Srinivasan, Development Officer (Chemicals), Ministry of Commerce and Industry, Government of India and Dr. S. R. Ramachandran, Deputy Director, Office of the Textile Commissioner, Bombay, for their assistance in connection with this inquiry.

M. D. BHAT, *Chairman.*

B. N. ADARKAR, *Member.*

B. N. DAS GUPTA, *Member*

D. K. MALHOTRA, *Secretary.*

BOMBAY;

*Dated the 28th August, 1954.*





## APPENDIX I

[Vide paragraph 2]

### MINISTRY OF COMMERCE & INDUSTRY

#### RESOLUTION

##### TARIFFS

*New Delhi, the 19th July, 1952*

**32(1)-T.B./52.**—In their Resolution in the Ministry of Commerce and Industry No. 32(1)-T.B./51, dated the 18th May, 1951, the Government of India announced that as the landed cost of imported caustic soda had risen considerably since the submission of the Report by the late Tariff Board, they did not consider that there was any need to impose a protective duty as recommended by the Tariff Board.

2. Some firms have now represented to the Government of India that the cost of manufacture of indigenous Caustic Soda and Bleaching Powder has increased since the last enquiry conducted by the late Tariff Board. They have, therefore, asked for a fresh enquiry to go into the question of protection to the industry.

3. After considering the matter, Government, in pursuance of section 11 of the Tariff Commission Act, 1951 (L of 1951), hereby refer to the Tariff Commission for enquiry and report the applications received for assistance or protection to the Caustic Soda and Bleaching Powder Industry.

4. In conducting the enquiry, the Commission will be guided by the principles laid down in section 14 of the said Act.

5. Any person, firm or company interested in the Industry or in the Industries dependent on the use of these articles, who desires that his or its views should be considered by the Tariff Commission may make a representation in writing to the Commission which should be addressed to the Secretary to the Tariff Commission, Contractor Building, Nicol Road, Ballard Estate, Bombay-1.



सत्यमेव जयते

## APPENDIX II

[Vide paragraph 5]

*List of firms, bodies and associations to whom the Commission's questionnaires were issued and from whom detailed replies or memoranda were received.*

\* Those who replied in detail.

@ Those who sent memoranda.

### (A) PRODUCERS:

- \*1. Mettur Chemical & Industrial Corporation Ltd., Mettur Dam R.S., Salem District, Madras State.
- \*2. Tata Chemicals Ltd., Bombay House, Bruce Street, Fort, Bombay.
- \*3. D.C.M. Chemical Works, P.B. No. 1211, Delhi.
- \*4. Calico Mills, Chemical Division, P.O. Box No. 12, Ahmedabad.
- \*5. Alkali & Chemical Corporation of India Ltd., 18, Strand Road, Calcutta.
- \*6. Rohtas Industries Ltd., Dalmianagar, Dehri-on-Sone Railway Station, Bihar.
- \*7. Travancore-Cochin Chemicals Ltd., Udyogmandal, P.O. (Via) Alwaye, Travancore-Cochin State, South India.
- \*8. Hindusthan Heavy Chemicals Ltd., Hindusthan Buildings, 4, Chittranjan Avenue, Calcutta.
9. Heavy Chemicals Ltd., "Catholic Centre", Madras-1.

### (B) IMPORTERS:

- \*1. Imperial Chemical Industries (India) Ltd., P.O. Box No. 182, 18, Strand Road, Calcutta.
2. Volkart Brothers, Graham Road, Ballard Estate, Bombay.
- \*3. New Standard Chemicals Co. Ltd., 281, Samuel Street, Vadgadi, Bombay.
- \*4. Biddle Sawyer & Co., (India) Ltd., "Das Chambers", 25, Dalal Street, Fort, Bombay.
5. The Bombay Kariana, Colour and Chemical Merchant's Association, 222-A, Samuel Street, Bombay-3.
6. Gaganmal Ramchand, New Silk Bazar, P.O. Box 2133, Kalbadevi Road, Bombay.
7. Bengal Chemical & Pharmaceutical Works Ltd., 164, Maniktala Main Road, Calcutta-11.
8. The Calcutta Chemical Co. Ltd., 35, Panditia Road, Calcutta-29.
9. Soorajmull Nagarmull, 3, Dalhousie Square (East), Calcutta-1.
10. The Raza Textiles Ltd., P.O. Jwalanagar, Rampur (U.P.).

### (C) CONSUMERS:

- \*1. Lever Brothers (India) Ltd., Scindia House, Ballard Estate, Bombay.
- \*2. Godrej Soaps Ltd., 316, Delisle Road, P.O. Jacob Circle, Bombay-11.
- \*3. Kamala Soaps Ltd., Sayajiganj, Baroda.
- \*4. Modi Soap Works, P.O. Modinagar, Meerut.
- \*5. Elphinstone Spinning & Weaving Mills Ltd., Kamani Chambers, 32, Nicol Road, Ballard Estate, Bombay.
- \*6. The Standard Mills Co. Ltd., P.B. 1038, 29, Veer Nariman Road, Fort, Bombay.

7. India United Mills Co. Ltd., Indu House, Dougall Road, Ballard Estate, Bombay.
- \*8. Buckingham & Carnatic Co. Ltd., P.O. Box No. 66, Madras.
9. Indian Bleaching, Dyeing & Printing Works, Ltd., P.B. 1038, 29, Churchgate Street, Fort, Bombay.
- \*10. The Elgin Mills Co. Ltd., Post Box No. 11, Kanpur.
- \*11. Lakshmiratan Cotton Mills Co. Ltd., Behari Niwas, Kanpur.
12. The Saraspur Mills Ltd., Post Box No. 1061, Saraspur Road, Ahmedabad-2.
13. The Raza Textiles Ltd., P.O. Jwalanagar, Rampur (U.P.).
14. Titaghur Paper Mills Co. Ltd., Chartered Bank Buildings, Calcutta-1.
- \*15. Mysore Paper Mills Ltd., Bhadravati, Mysore State Railway.
- \*16. Sirpur Paper Mills Ltd., Vishwa Bhawan, 364, Himayatnagar, Hyderabad (Deccan).
- \*17. Hindustan Vanaspati Manufacturing Co. Ltd., Scindia House, Ballard Estate, Bombay.
- \*18. The Tata Oil Mills Co. Ltd., Bombay House, Bruce Street, Fort, Bombay.
- \*19. National Rayon Corporation Ltd., Ewart House, Bruce Street, Bombay-1.
- \*20. Travancore Rayons Ltd., Rayonpuram, Perambavour, North Travancore.
- \*21. Sirsilk Ltd., Sirpur-Kaghnagar (C. Rly.), Hyderabad (Deccan).
- \*22. Director of Public Health, Government of Bombay, Poona-1.
- \*23. Commissioner, Corporation of Madras, Madras.
- \*24. Gluconate Ltd., 115, Princep Street, Calcutta-13.
25. Gaganmal Ramchand, New Silk Bazar, P.O. Box 2133, Kalbadevi Road, Bombay-2.
26. Bengal Chemical & Pharmaceutical Works Ltd., 164, Maniktala Main Road, Calcutta-11.
- \*27. The Calcutta Chemical Co. Ltd., 35, Panditia Road, Calcutta-29.
- \*28. Shambu Nath & Sons Ltd., G.T. Road, P.B. No. 12, Amritsar.
29. Soorajmull Nagarmull, 3, Dalhousie Square (East), Calcutta-1.
30. Snow White Food Products Co. Ltd., 18, Netaji Subhas Road, Calcutta-1.
- \*31. Hind Cycles Ltd., 250, Worli, Bombay-18.
- \*32. Indian Oxygen and Acetylene Co. Ltd., 48/1, Diamond Harbour Road, Calcutta-27.

#### (D) CONSUMER ASSOCIATIONS:

##### (i) Soap manufacturers.

- @1. Indian Soap & Toiletries Makers' Association, P-11, Mission Row Extension, Calcutta.
2. South India Soap Makers' Association, Edacochi P.O., Travancore-Cochin State, South India.

(ii) *Textile manufacturers.*

- @3. Mill Owners' Association, Elphinstone Building, Churchgate Street, Bombay.
- @4. Ahmedabad Mill Owners' Association, Post Box No. 7, Ahmedabad.
- 5. Madhya Pradesh Mill Owners' Association, Dhantaway Chambers, Gita Ground, Sitabuldi, Nagpur.
- @6. Southern India Mill Owners' Association, Coimbatore, Madras State.
- @7. Bengal Mill Owners' Association, 2, Church Lane, Calcutta.

(iii) *Paper manufacturers.*

- @8. Indian Paper Mills Association, 23-B, Netaji Subhas Road, Calcutta.
- @9. Indian Paper Makers' Association, Royal Exchange, Post Box No. 280, Calcutta.

(iv) *Vanaspatis manufacturers.*

- 10. Vanaspati Manufacturers Association of India, Arya Bhawan, Ballard Estate, Bombay.



## APPENDIX III

[Vide paragraph 5]

*List of persons who attended the Commission's public inquiry on 11th and 12th February, 1954*

### PRODUCERS :

1. Shri P. A. Narielwala . . . . .	}	Representing	Tata Chemicals Ltd., Bombay House, Bruce Street, Fort, Bombay.
2. " C. R. Rao . . . . .			
3. " J. D. Adhia . . . . .			
4. " K. S. Mody . . . . .			
5. " T. S. Natarajan . . . . .			
6. Shri K. K. Raman . . . . .	}	"	The Mettur Chemical & Industrial Corporation Ltd., Mettur Dam R. S. Salem (Dt.), South India.
7. " R. Natarajan . . . . .			
8. " K. Rajagopal . . . . .			
9. " T. M. Krishna Rao . . . . .			
10. Shri M. L. Seth . . . . .	}	"	The D.C.M. Chemical Works, P.O. Box 1211, Delhi.
11. " T. R. Pareek . . . . .			
12. " R. Subramanyam . . . . .			
13. " D. C. Mittal . . . . .			
14. " B. R. Bhatia . . . . .	}	"	The Travancore-Cochin Chemicals Ltd., Udyogmandal P. O., Alwaye, South India.
15. Shri R. V. Ramani . . . . .			
16. " A. R. Narasimhan . . . . .			
17. Shri S. A. Kher . . . . .	}	"	Calico Chemical Divi- sion, P.O. Box 12, Amedabad.
18. " A. P. Vasa . . . . .			
19. Dr. B. C. Jain . . . . .			
20. Mr. C. A. Pitts . . . . .		"	Rohtas Industries Ltd., Dalmianagar, Dehri- on-Sone Rly. Station, Bihar State.
		"	The Alkali & Chemical Corporation of India Ltd., 18, Strand Road, Calcutta-1.

### IMPORTERS :

1. Mr. C. A. Pitts . . . . .	"	Imperial Chemical In- dustries (India) Ltd., 18, Strand Rd., Calcutta-1.
2. Shri Keshavlal Naranjee Bhatt . . . . .	"	The New Standard Che- micals Co., Ltd., 281, Samuel St., Vadgadi, Bombay-3.

### CONSUMERS :

1. Dr. J. S. Badami . . . . .	"	Indian Soap & Toile- tries Makers' Asso- ciation, P-11, Mission Row Extension, Cal- cutta-1.
2. Mr. J. G. Brocklehurst . . . . .	"	Lever Brothers (India) Ltd. Scindia House, Bal- lard Estate, Bombay-1.

CONSUMERS—*contd.*

3. Shri K. R. Gokulam . . . . .	Representing	Godrej Soaps Ltd., 316, Delisle Road, P.O. Jacob Circle, Bombay-11.
4. Shri J. B. Sane . . . . .	"	The Millowners' Association, Elphinstone Building, Veer Nariman Rd., Bombay-1.
5. Shri Surottam P. Hutheesing . . . . .	"	The Ahmedabad Mill-owner's Association, Lal Darwaja, Post Box No. 7, Ahmedabad-1.
6. Dr. A. C. Chhatrapati . . . . .	"	The Vanaspati Manufacturers Association of India, Arya Bhavan, Graham Rd., Ballard Estate, Bombay-1.
7. Dr. M. D. Parekh . . . . .	}	The National Rayon Corporation Ltd., Ewart House, Bruce Street, Fort, Bombay.
8. Shri C. G. Mahant . . . . .		
9. Dr. M. B. Ichaporia . . . . .		
	"	The Tata Oil Mills Company Ltd., Bombay House, Bruce Street, Fort, Bombay.

## GOVERNMENT OFFICIALS:

1. Shri N. Srinivasan, Development Officer (Chemicals), Ministry of Commerce & Industry, Government of India, New Delhi.
2. Dr. S. R. Ramachandran, Deputy Director, Office of the Textile Commissioner, Ballard Estate, Bombay.
3. Shri S. Ramabhadran, J.S.O., IGS Labs., Ministry of Defence, Government of India, Bombay.
4. Shri B. Natarajan, Senior Assistant Traffic Manager (Rates), Central Railway, Bombay.
5. Shri V. B. Thosar, Assistant Director of Industries (Chemicals), Office of the Director of Industries and Statistics Authority, Old Custom House Yard, Bombay-1.

# APPENDIX IV

[Vide paragraph 15.2]

Statement showing the selling prices charged by the manufacturers of caustic soda since May, 1951

(Price per cwt.)

Year and month	Tata Chemicals		Mettur Chemicals		D.C.M. Chemical		Calio Chemical Division		Alkali & Chemical Corporation		Travancore-Cochin Chemicals	
	Solid	Liquid	Solid	Liquid	Solid	Liquid	Solid	Liquid	Solid	Liquid	Solid	Liquid
I	2	3	4	5	6	7	8	9	10	11	12	13
May 1951	Rs. A. P. 40 2 0	..	Rs. A. P. 30 0 0	Rs. A. P. 38 2 0	Rs. A. P. N.A.	Rs. A. P. N.A.	Rs. A. P. ..	Rs. A. P. N.A.	Rs. A. P. ..	Rs. A. P. 31 4 0	Rs. A. P. ..	Rs. A. P. ..
June 1951	do.	..	32 0 0 to 30 0 0	do.	N.A.	N.A.	..	40 2 0	..	do.	..	..
July 1951	do.	..	40 2 0	do.	N.A.	N.A.	..	do.	..	do.	..	..
August 1951	do.	..	do.	do.	N.A.	39 2 0	..	do.	..	do.	..	..
September 1951	do.	..	do.	do.	N.A.	39 8 0	..	do.	..	do.	..	..
October 1951	do.	..	do.	do.	42 12 5	41 9 10	..	do.	..	do.	..	..
November 1951	do.	..	do.	do.	41 4 8	41 15 2	..	do.	..	do.	..	..
December 1951	do.	..	do.	do.	41 2 4	39 0 4	..	do.	..	do.	..	..
January 1952	do.	..	do.	do.	41 2 5	38 12 6	..	do.	..	do.	..	..
February 1952	do.	..	do.	do.	41 2 2	37 6 1	..	do.	..	do.	..	..
March 1952	do.	..	do.	do.	41 2 3	38 6 0	..	do.	..	do.	..	..
April 1952	do.	..	do.	do.	No Sales	35 2 4	..	36 11 10	..	do.	..	..
				35 0 0	28 11 8	31 7 6	..	28 14 5	..	do.	..	..
				to								
May 1952	do.	..	do.	38 2 0	28 9 3	33 10 6	..	29 14 1	..	do.	..	..
June 1952	do.	..	do.	do.	28 9 6	33 4 6	..	32 5 4	..	do.	..	..
July 1952	do.	..	do.	32 0 0	28 12 2	33 10 6	..	33 12 10	..	do.	..	..
				to								
				38 2 0								

August 1952	34 0 0	..	30 0 0	32 0 0	29 9 10	33 3 4	..	34 12 6	..	..	..
September 1952	do.	..	35 0 0	34 0 0	29 8 7	33 2 0	..	34 12 6	..	..	..
October 1952	33 0 0	..	do.	do.	28 15 11	33 4 8	..	34 4 8	..	33 8 0	29 8 0
November 1952	do.	..	do.	do.	29 9 4	32 13 8	..	33 12 10	..	34 8 0	30 8 0
December 1952	do.	..	do.	do.	29 6 6	31 12 4	..	do.	..	do.	do.
January 1953	31 0 0	..	do.	30 0 0	29 15 0	32 6 4	..	34 4 2	..	do.	do.
February 1953	33 0 0	..	33 0 0	32 0 0	31 11 11	32 7 6	..	34 11 9	..	do.	do.
March 1953	34 0 0	..	36 0 0	do.	32 15 2	32 5 8	..	38 1 9	..	do.	do.
April 1953	34 8 0	..	36 0 0	do.	32 11 0	32 3 0	..	40 2 0	..	do.	do.
May 1953	do.	..	36 0 0	do.	35 8 8	35 9 0	..	do.	..	do.	do.
June 1953	do.	..	32 8 0	do.	36 11 9	34 5 8	..	do.	..	32 4 8	do.
July 1953	do.	..	36 0 0	do.	37 5 11	33 10 8	..	do.	..	do.	do.
August 1953	do.	..	36 0 0	do.	N.A.	33 13 8	..	do.	..	do.	do.
September 1953	do.	..	do.	do.	25 4 5	33 13 0	..	do.	..	do.	do.
October 1953	do.	..	32 8 0	do.	37 7 2	33 11 2	..	do.	..	do.	do.
November 1953	do.	..	35 0 0	do.	37 0 3	32 14 1	..	37 10 1	..	do.	do.
December 1953	do.	..	36 0 0	do.	34 11 3	33 5 0	..	40 1 0	..	do.	do.